Welcome to Harris Broadcast

Maxiva UAX

UHF Air Cooled Transmitters

Presented by:

Harris Training Department



1 kW ATSC or COFDM, 1.5 kW Analog

Maxiva UAX Series Air Cooled UHF TV Transmitters

UAX 1500 AN

Model no. prefix

U = UHF (others V, L or F)

A = Air Cooled (L for liquid)

X = Transmitter

Peak visual power for analog

Average power for digital

After filter power shown in model number assumes 1dB max filter loss

Model no. suffix

AN = analog (ATV)

AT=ATSC

DV=DVB-T/H

T2=DVBT2

IS=ISDB-T

CT= CTTB

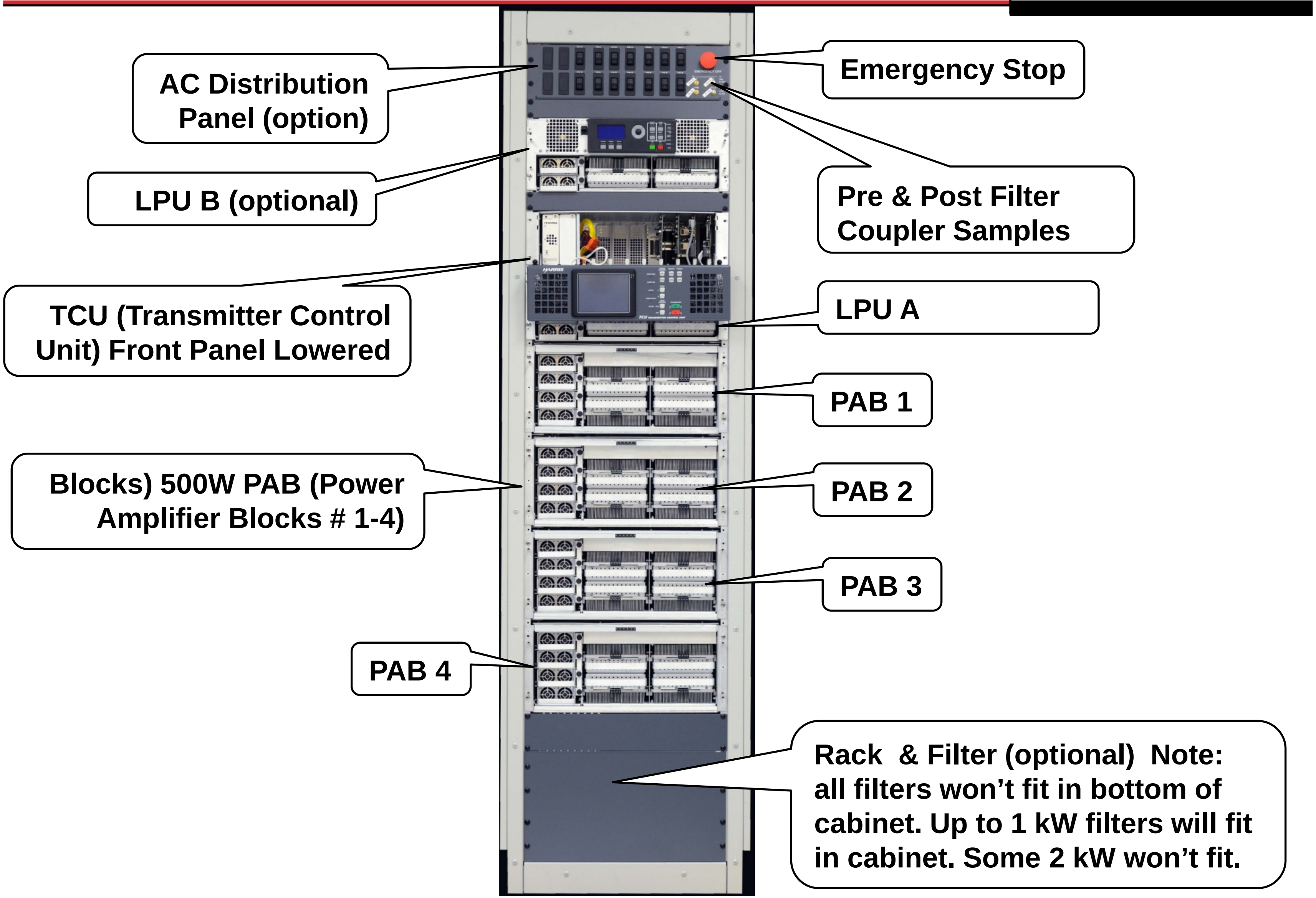
CM=CMMB

MH=Mobile Handheld

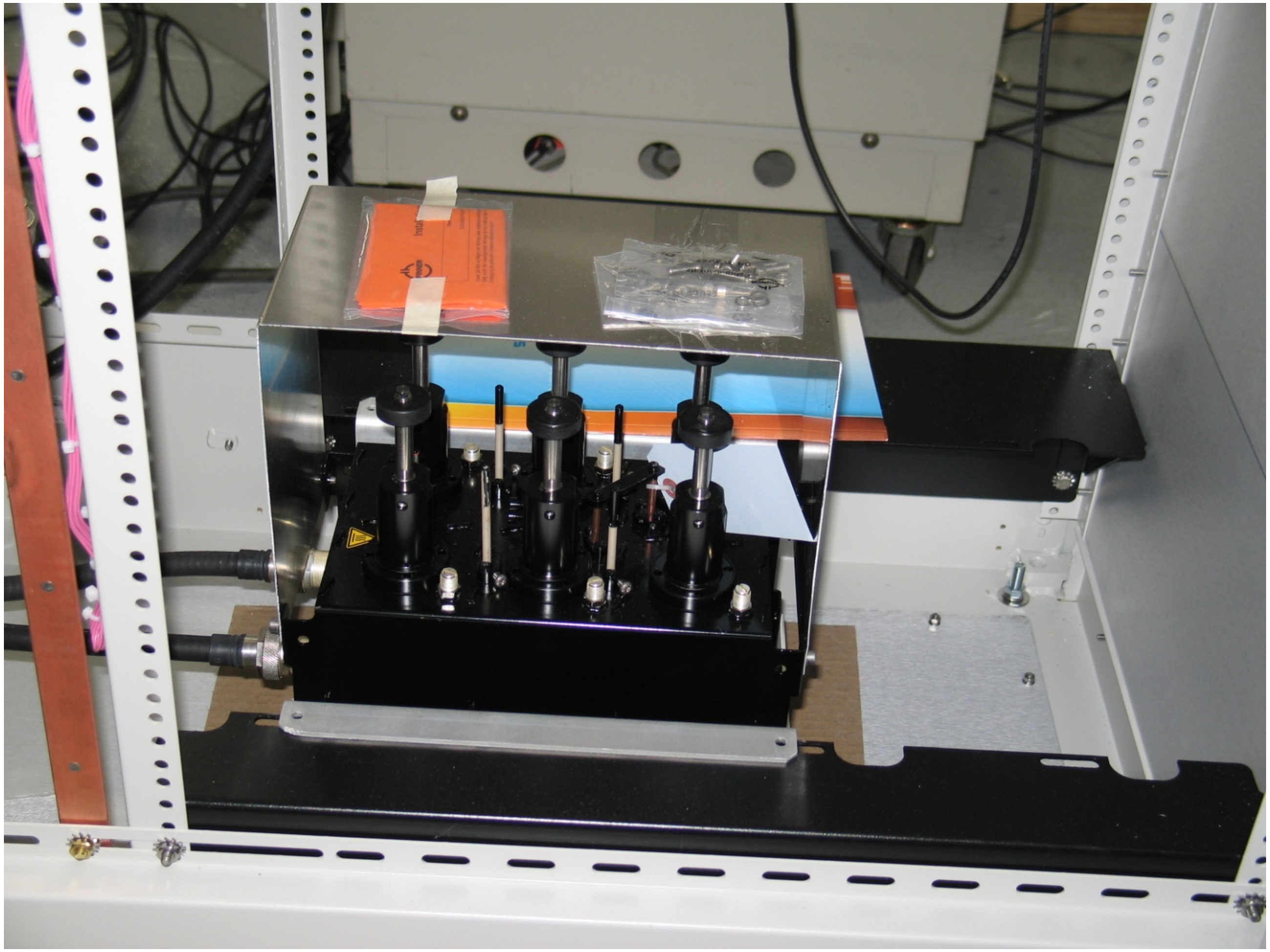
(used in ATSC, was MPH, need Synchrony)



UAX System Building Blocks



250 W Internal Filter



Rack side cover removed

Difficult to retune in the field but can be done. May take a long time without experience. Not currently built by Harris.

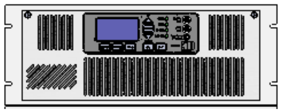
All cabling in deluxe rack option is supplied by Harris. This includes SMA monitor points on AC distribution panel.

Maxiva UAX Transmitters

RoHS ok ✓

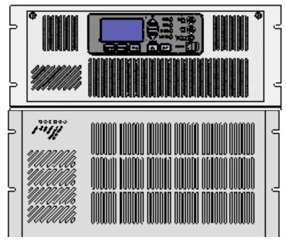
CE

10W/100W 4 RU



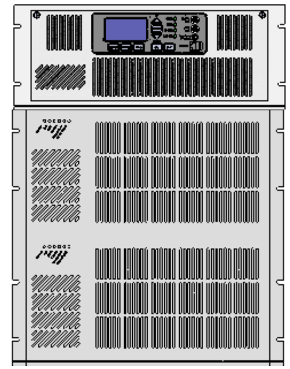
LPU

250W/500W
9 RU Single
16 RU Dual



LPU & PAB

1kW
14 RU Single
21 RU Dual



LPU & 2 PABs

2kW
24 RU Single
31RU Dual



U = UHF

A = Air Cooled

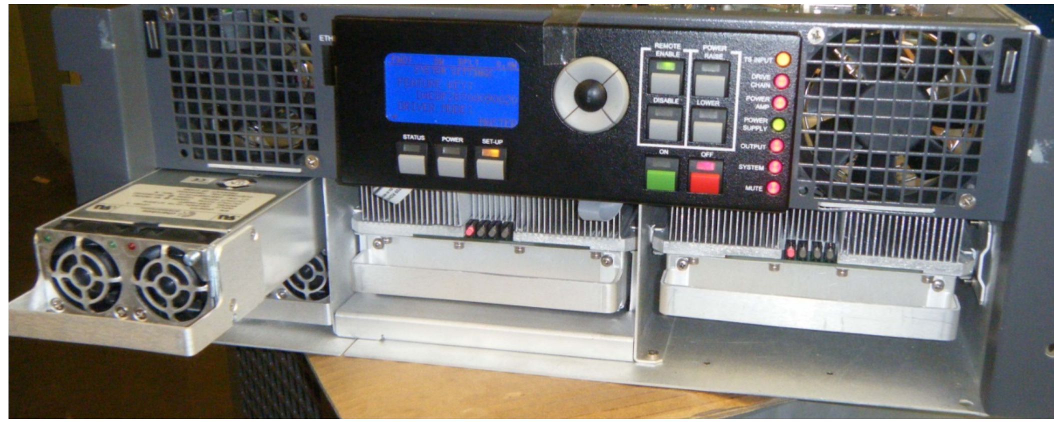
X = Transmitter

- Compact 19" rack mount form factor
- Same RF pallet from liquid cooled
- Hot pluggable RF modules (PAs all same except for 10W unit)
- Hot pluggable power supplies (all same)
- Integrates Apex M2X technology for modulation consistency
- Control from single exciter, add TCU controller for dual drive options.
- Dual drive options available from 250W to 2 kW
- Low Power levels 5, 10, 25 & 50W available in UAX-C Compact Class.
- LPU is 18 inches deep.

Maxiva UAX– Power Supply

- Universal input 100–240 VAC 50/60HZ
- High-efficiency auto ranging design
- Good power factor (>0.98, nominal-very efficient)
- Power supply efficiency ~90%
- Low AC line harmonics
- Mounted on slides, hot pluggable through front of transmitter
- One power supply per PA module for high reliability

Up to 100W at 110VAC - 250W & above 208VAC



LPU = Low Power Unit

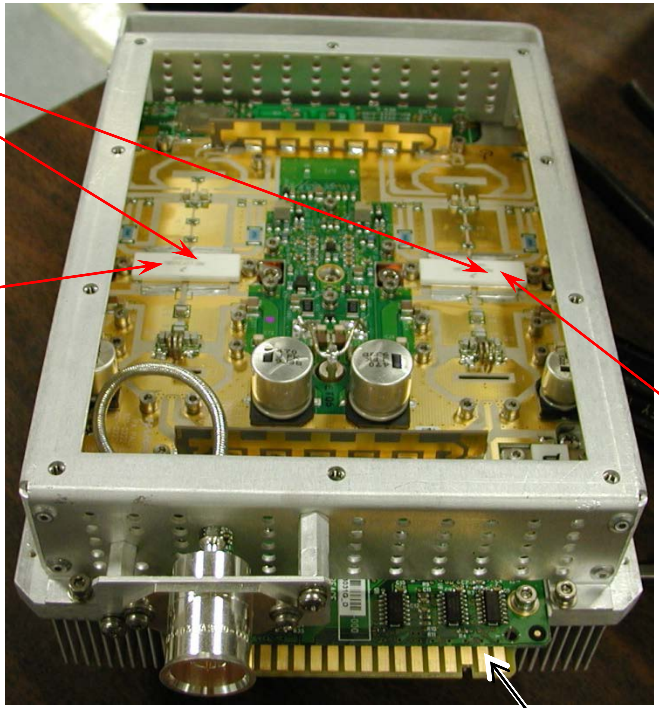
Power Supply Module



Maxiva UAX PA Module

- Two 90 Watt digital RF amplifiers (FET's) per module
- 180 watts (avg.) normal digital operation (90W + 90W). Approx. 20dB gain per FET. 17-19 dB overall gain for module.
- Lightweight, hot-pluggable and interchangeable
- Two LDMOS (FET) devices per module
- 500W PA block weighs 69lbs including modules.
- Broadband UHF – Band IV & Vt
- Test fixture needed to rebias FETs if replaced individually.

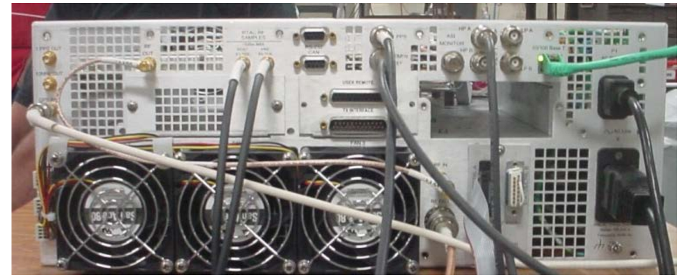
Weight: ~ 2.3 kg (5.1 pounds)



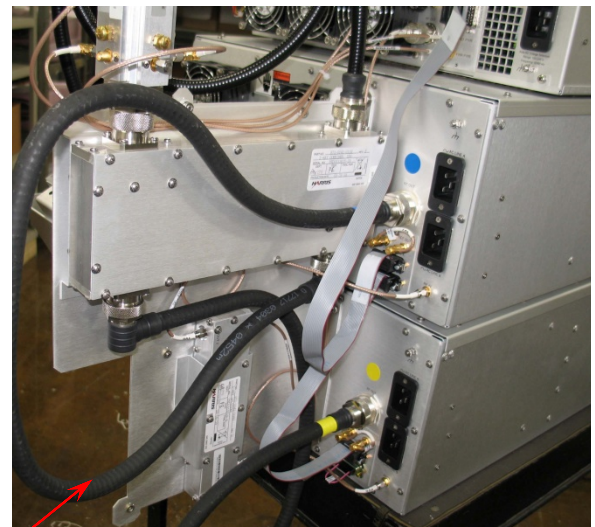
UAX PA Module (cover removed)

Maxiva UAX– Operating Voltages

- Standalone = Rack w/o AC dist. Panel or no rack. Just components up to 1 kW.
- LPU Power Levels up to 100W digital (150W analog, peak of sync with 10% aural): Single Phase, 110-240VAC, 50 or 60Hz, one IEC C15 and one IEC C20 (16 amp rating in Europe) AC input connector.
- Tx Power Levels 250W digital to 3000W (analog): Single Phase, 208-240VAC, 50 or 60Hz, one IEC C15 and one IEC C20 AC inlet connector for LPU's and dual IEC C20 AC inlet connectors for each PAB (power amplifier block) chassis.
- Check voltage at plugs 1 at a time before initial turn on.



LPU Rear



Dual PAB Rear

Don't stress cables during installation.

Maxiva UAX– Operating Voltages

- Transmitters are configurable on-site for single or three phase AC connection. Loads are split to keep max components on line if phase is lost.
- If three phase power is used then supply voltage (per phase) must be between 110 & 240VAC for LPU and 208-240VAC for PAB's.
- Single phase 208 VAC ok with large breaker.
- An optional in-rack AC distribution chassis (Deluxe Rack) provides individual circuit breaker protection for each AC input. AC distribution panel not included in Basic Rack.
- Refer to the wiring diagram, AC distribution drawing 843-5602-104 for more detail.

UAX Power Levels

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Configuration Single LPU Systems	PA & PS Modules	Model Numbers		Output Power		Output
		Analog	Digital	Analog (pk.)	Digital (avg.)	
4RU LPU	1	UAX 15AN	UAX 10*	15 W	10 W	N
4RU LPU	2	UAX 75AN	UAX 50*	75 W	50 W	N
4RU LPU	2	UAX 150AN	UAX 100*	150 W	100 W	N
4RU LPU (1) 5RU PAB	2 2	UAX 375AN	UAX 250*	375 W	250 W	7/16 DIN
4RU LPU (1) 5RU PAB	2 4	UAX 750AN	UAX 500*	750 W	500 W	7/16 DIN
4RU LPU (2) 5RU PAB	2 8	UAX 1500AN	UAX 1000*	1.5 kW	1 kW	7/16 DIN
4RU LPU (4) 5RU PAB	2 16	UAX 3000AN	UAX 2000*	3.0 kW	2 kW	1-5/8 Rigid

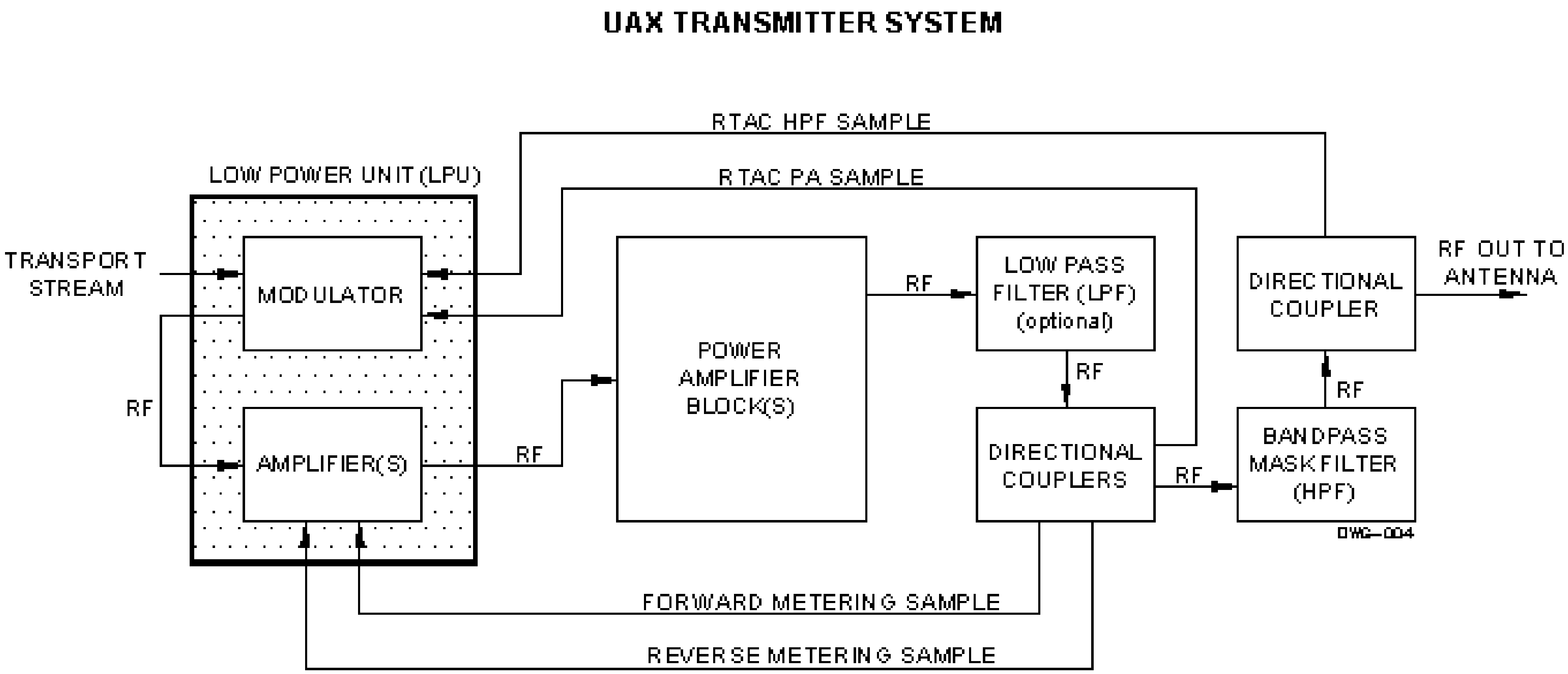
Coupler output is 7/16 Din

Up to 8 kW models available.

* DV = DVB-T
* IS = ISDB-Tb
*FL = FLO
*AT = ATSC
*CM = CMMB
*CT = CTTB
*MH = ATSC Mobile Handheld
*T2=DVBT2

Notes: Digital power levels are average power at the output of mask filter. 1 dB filter loss assumed.

Analog power levels are peak sync power at the band pass (IMD) filter output.



UAX TRANSMITTER SYSTEM
RTAC HPF SAMPLE
LOW POWER UNIT (LPU)
RTAC PA SAMPLE
TRANSPORT STREAM
MODULATOR
RF
AMPLIFIER(S)
RF
POWER AMPLIFIER BLOCK(S)
RF
LOW PASS FILTER (LPF) (optional)
RF
DIRECTIONAL COUPLERS
RF
BANDPASS MASK FILTER (HPF)
RF
DIRECTIONAL COUPLER
RF OUT TO ANTENNA
DWG-004
FORWARD METERING SAMPLE
REVERSE METERING SAMPLE

UAX Documentation Package Contains:

Technical Manual 888-2693-004 (English)

Drawing Package 943-5276-170

Note:

Manuals available in Portuguese (005) and Chinese (002)

HARRIS

DWG NO. 843 5276 170 .

843-5276-170 UAX DWG PACKAGE COVER SHEET

SECTION - 100 DRIVE UNIT & 10-100W XMTR

8010215061 SCH, TRANSMITTER I/O
8010215081 SCH, LVPS DISTRIBUTION
8010223041 SCH, PA BACKPLANE
8010223051 SCH, PS BACKPLANE
8010223091 SCH, FRONT PANEL
8435602100 WIRING DIA, UAX 10-100W AMPLIFIER
8435602400 WIRING DIAGRAM UAX 10/50/100W XMTR
8435602705 AC FLOW DIAGRAM UAX

SECTION - 200 250/500W POWER BLOCK & 250/500W XMTR

8010223081 SCH, LED PANEL
8010223151 SCH, 4-WAY PS BACKPLANE
8010223161 SCH, 4-WAY PA BACKPLANE
8435602101 WIRING DIA, 500W AMPLIFIER
8435602401 WIRING DIA UAX 500/250W D/DRIVE/TCU/RACKED
8435602403 WIRING DIA UAX 500/250W S/DRIVE RACKED
8435602404 WIRING DIA UAX 500/250W S/DRIVE/STANDALONE

SECTION - 300 1KW XMTR

8435602405 WIRING DIA UAX 1KW D/DRIVE/TCU/RACKED
8435602407 WIRING DIA UAX 1KW S/DRIVE/RACKED
8435602408 WIRING DIA UAX 1KW S/DRIVE/STANDALONE

SECTION - 400 2KW XMTR

8435602409 WIRING DIA UAX 2KW D/DRIVE/TCU/RACKED
8435602411 WIRING DIA UAX 2KW S/DRIVE/RACKED
8435602412 WIRING DIA UAX 2KW S/DRIVE/STANDALONE

SECTION - 500 POWER AMPLIFIER

8010222081 SCH, PA PALLET
8010223011 SCH, INPUT LAUNCH
8010223031 SCH, PA INTERFACE
8010223071 AMP CONTROL
8435602108 WIRING DIAGRAM AMPLIFIER

SECTION -600 - SUPPORT & COMMON ASSYS

8010213011 SCH, MCF5484 UC MODULE
8010223061 SCH, FAN FILTER
8010224041 SCH, UAX/VAX CUSTOMER I/O BOARD

SECTION -700 TRANSMITTER CONTROL UNIT

8010221321 SCH, PROCESSOR CONTROL
8010221031 SCH, BASEPLANE
8010221041 SCH, LCD BOARD
8010221051 SCH, POWER SUPPLY
8010221061 SCH, POWER SUPPLY BACKPLANE
8010221081 SCH, CUSTOMER I/O
8010221101 SCH, USER INTERFACE
8010221191 SCH, LAX/UAX TCU INTERFACE
8010221211 SCH, MAIN CONTROLLER

SECTION - 800 SYSTEM

8435276159 DIAG, UAX SYSTEM INTERCONNECT
8435602104 WIRING DIAGRAM AC DIST UAX
8435602148 OUTLINE DRAWING, UAX XMTRS

TOLERANCES UNLESS NOTED .X ± .030 .XX ± .015 .XXX ± .005 ANGLES ± 1 DEG ALL √ INDICATES 125 MICRO INCH

ALL DIMENSION IN INCHES UNLESS OTHERWISE NOTED
MUST COMPLY WITH WORKMANSHIP STANDARDS SPEC 817-1152-001

NOTES

LTR	ZONE	DATE	DFTM	ENG	ECO NBR
J	.	07-20-12	OSR	.	61859
REPLACED 8010224011 WITH 8010224041					
H	.	June 27, 2012	SEC	SEC	61731
REVISED SIGNAL PROCESSOR SCH NUMBER					

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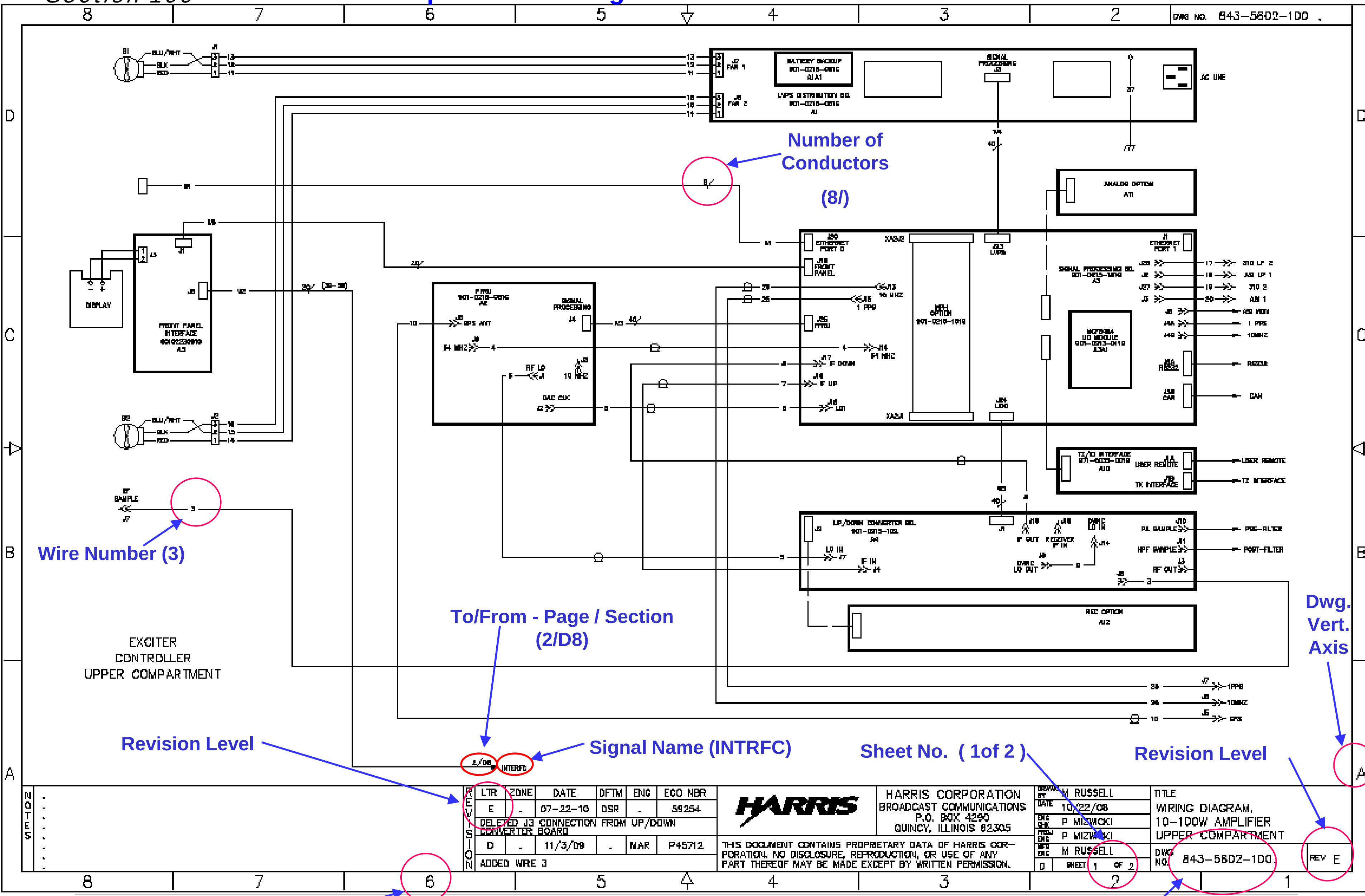
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
5300 KINGS ISLAND DR, SUITE 101
MASON, OHIO 45040

DRAWN BY NICKEL
DATE 7-7-09
ENG CHK NICKEL
PROJ ENG MIZWICKI
MFG ENG NICKEL
D SHEET 1 OF 1

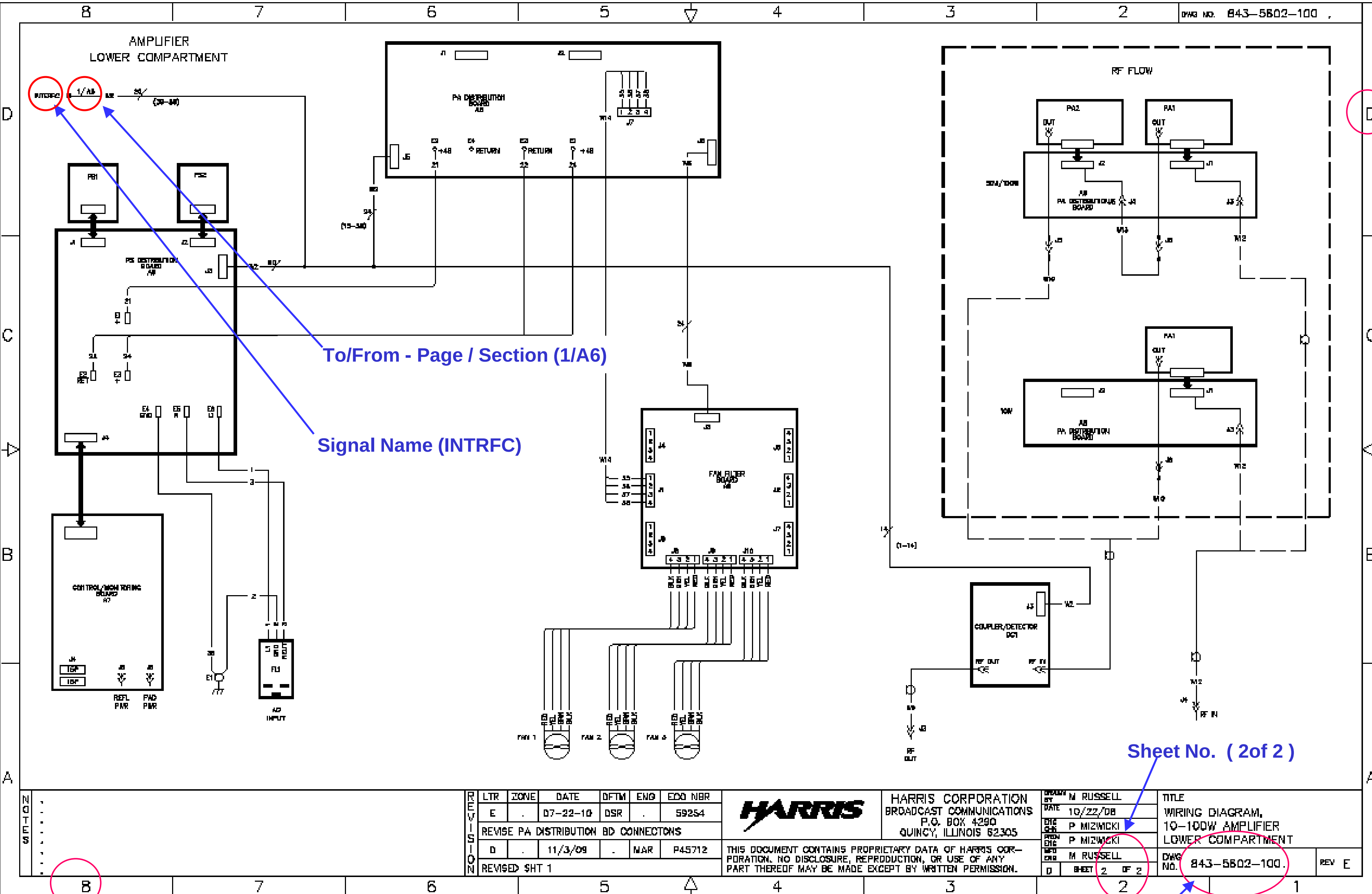
TITLE
COVER SHEET
UAX TRANSMITTERS
-

DWG NO. 843 5276 170 .
REV J

Examples of Drawing Details



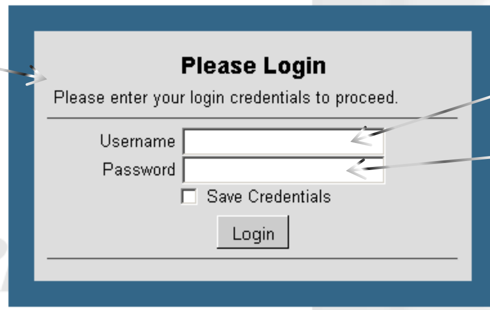
Examples of Drawing Details



Set or find IP address in Service>Netwrk screen

Connect to IP address - using Mozilla Firefox for best results. IE 8 should work too.

15 minute timeout on TCU

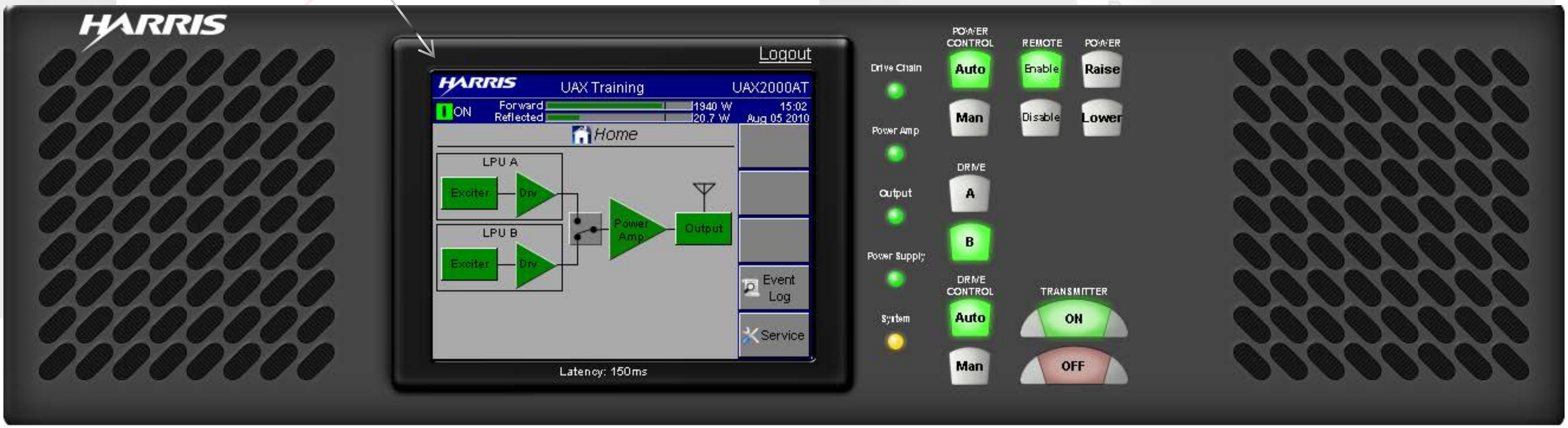


Username = admin

Password = harris2009 (remote)

= harris (local GUI on older non-PPC units)

PC runs LINUX. Improvements to come will increase speed and responsiveness.

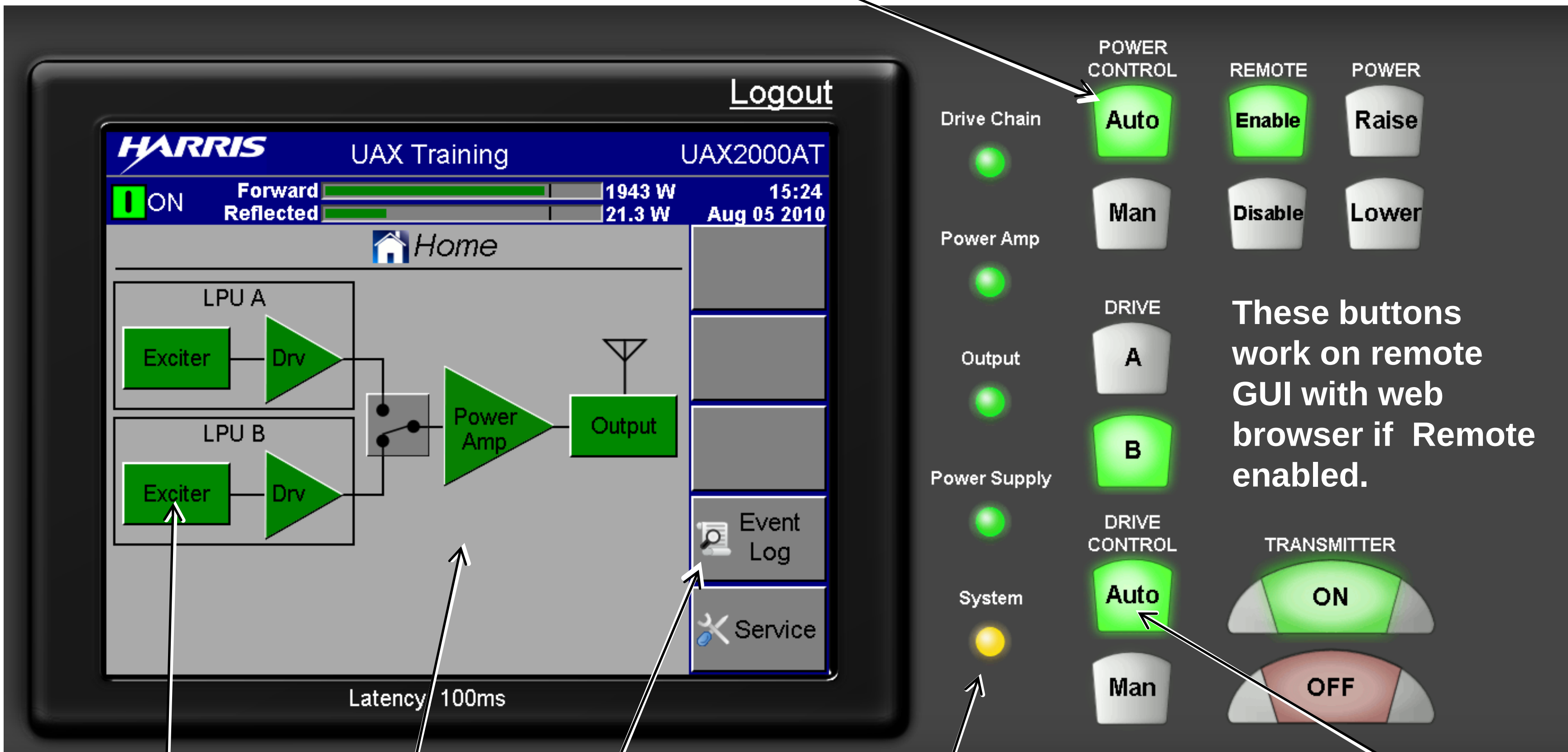


TCU controls LPU switching and TX system in dual LPU systems.

TCU Home Screen & Front Panel Buttons

TCU users not limited. LPU will have 2 Eng, 2 Operator, 2 Guest levels.

Auto is normal. Man disables ALC.



These buttons work on remote GUI with web browser if Remote enabled.

Active LPU

GUI Panel Computer

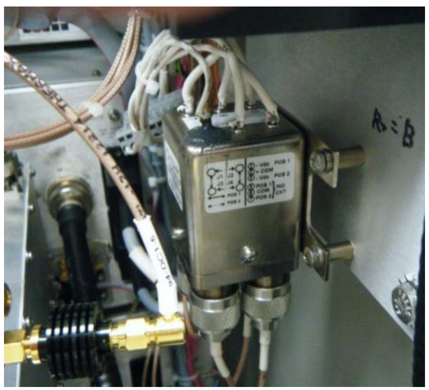
TCU event log. Go to active LPU for detailed fault log info.

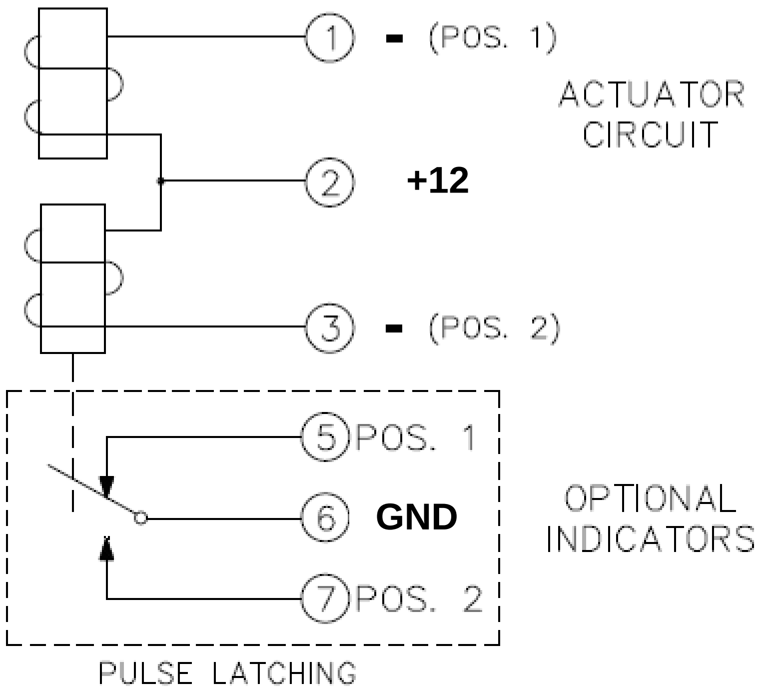
Yellow LED indicates missing RTAC sample in this case. Need to check active LPU for warnings and errors. Not always listed in TCU event log.

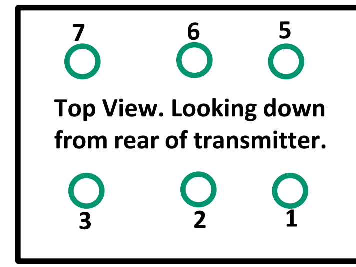
Auto can't be selected with a bad LPU.

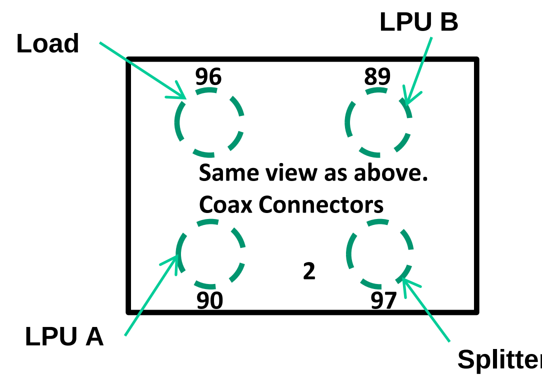
LPU Coaxial Switch

- **Pins 1, 2 and 3 are used for LPU switching. Pin 2 has +12 V applied to it (comes from TCU, marked COM on the relay box).**
- **Pins 1 and 3 normally have 12 V applied (via pin 2) but either 1 or 3 are grounded briefly to make the switch change positions. Measuring 12 V between case and pins 1, 2 & 3 is normal except during a switch.**
- **The relay will switch manually if you ground pins 1 or 3 to the case with a screwdriver**





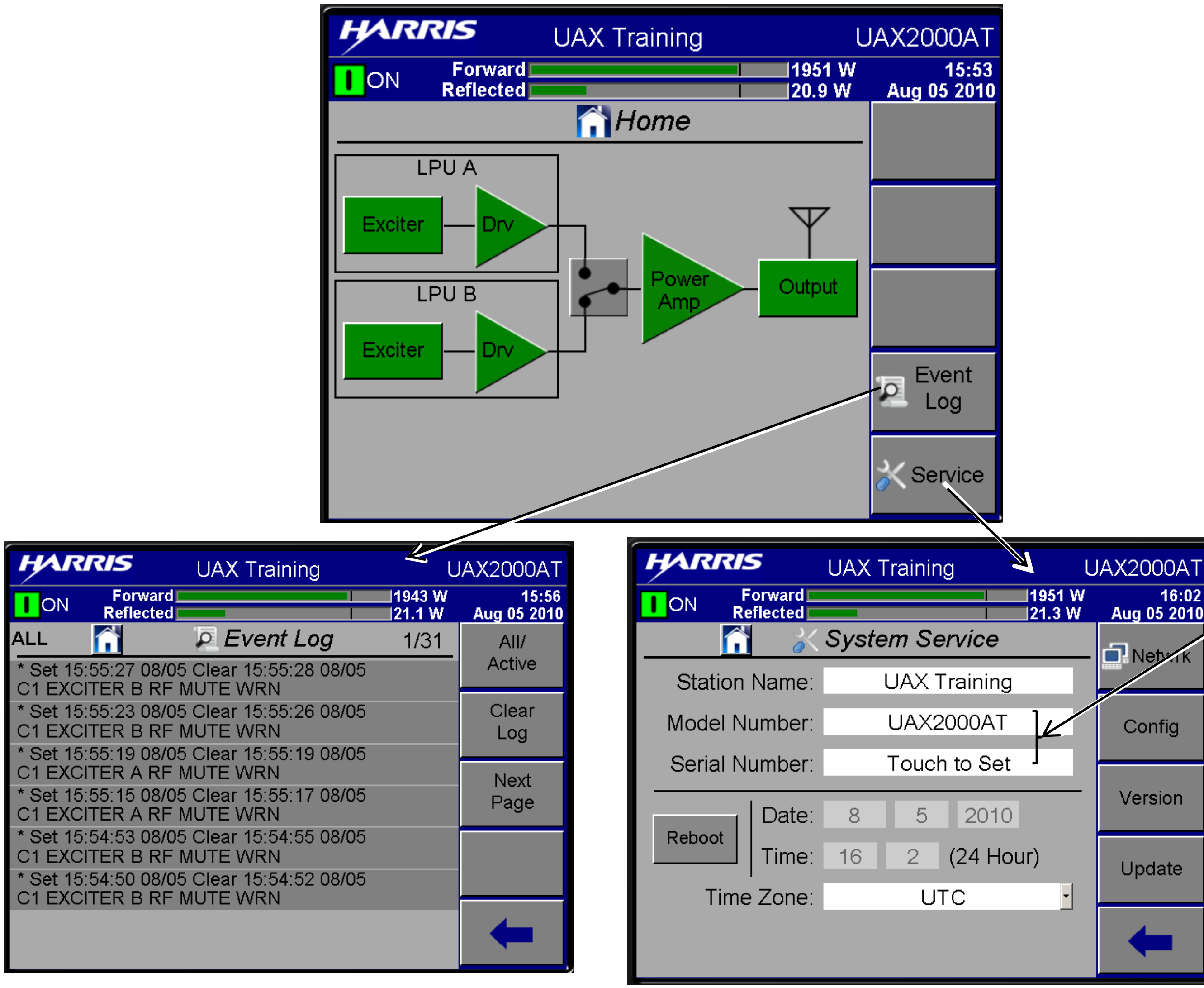




Pins 5, 6 & 7 are used for status.

Pin 6 is ground. Depending on switch position Pin 6 connects to either pin 5 or pin 7 to send a ground indication (status) back to the TCU. The pin not grounded will measure 12V.

TCU Home Screen, Event Log, & System Service

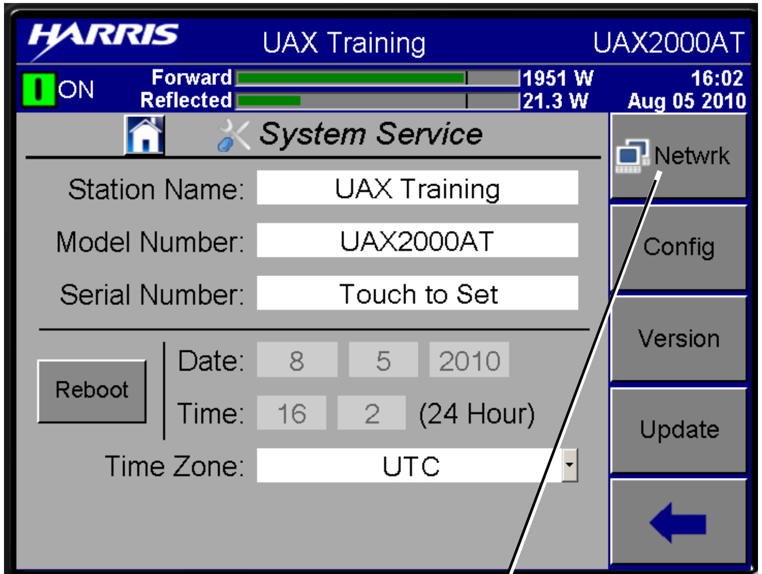


1x set up at factory

next level solutions

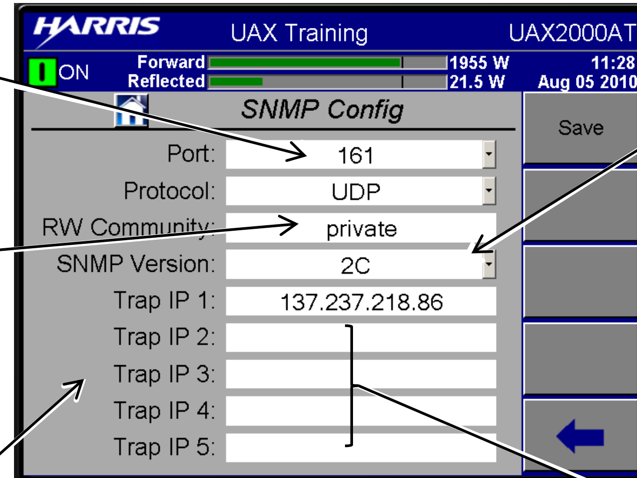
TCU Screens System Service, Network, SNMP, NTP

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Set by SNMP user.

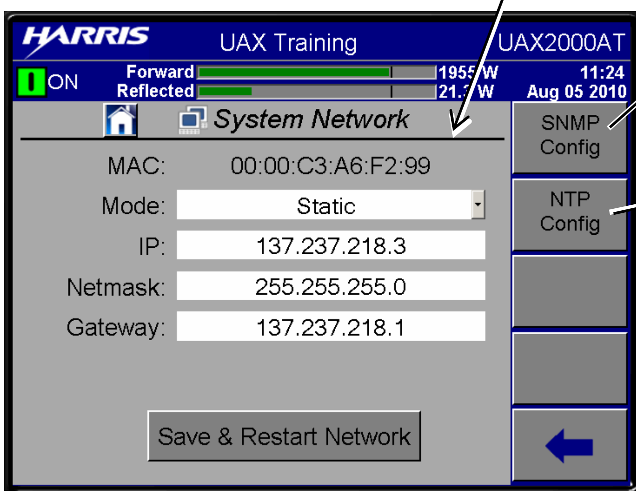
Watch for leading spaces.



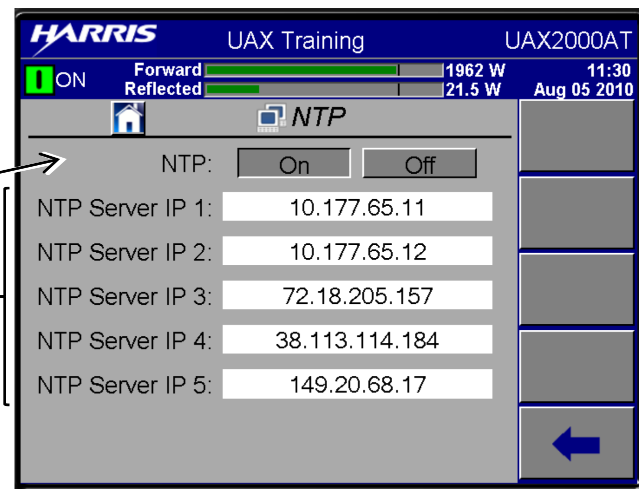
Only support versions 1 &2C at this time.

Simple network management protocol. Use with MIBs to control system.

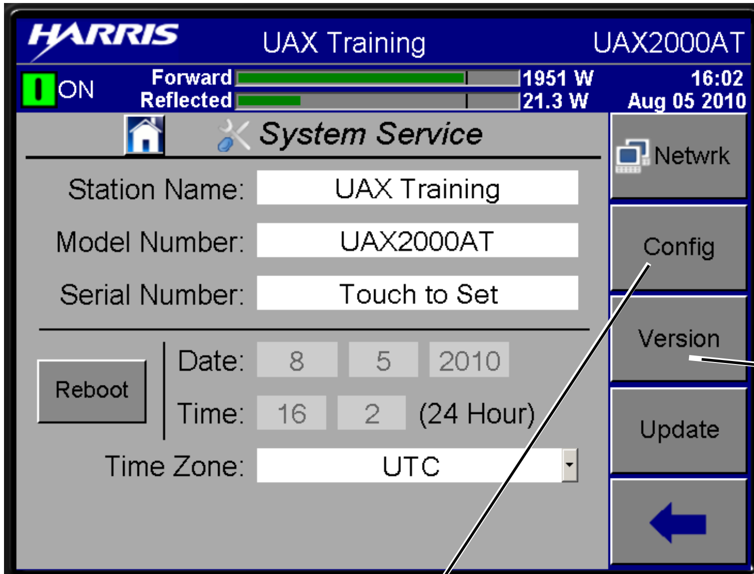
Trap monitor used in networks, CS Navigator management system.

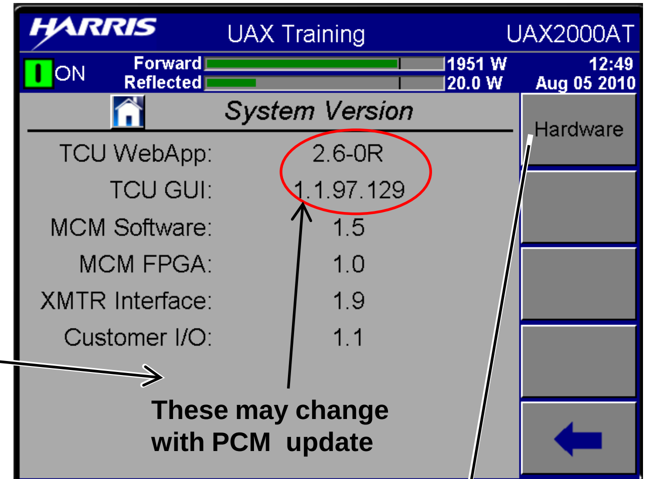


LPU takes only one NTP address.

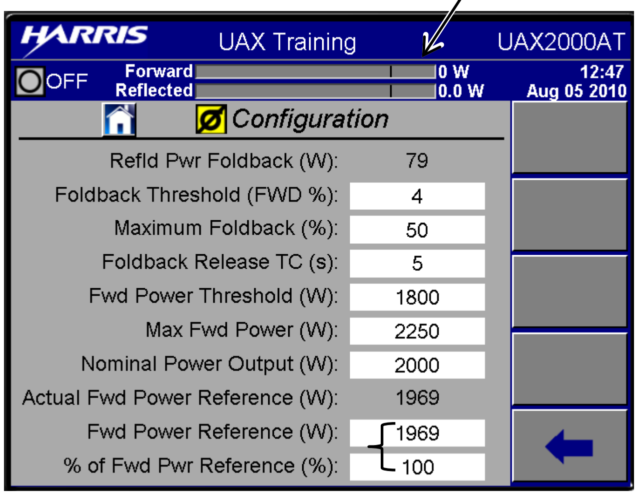


Network time protocol. Time references from network locations.



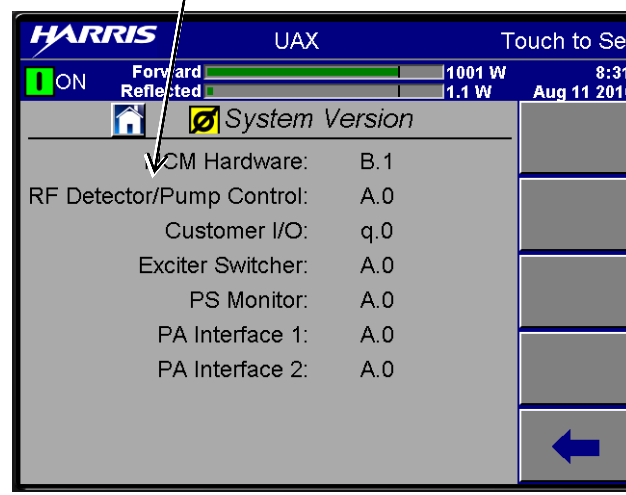


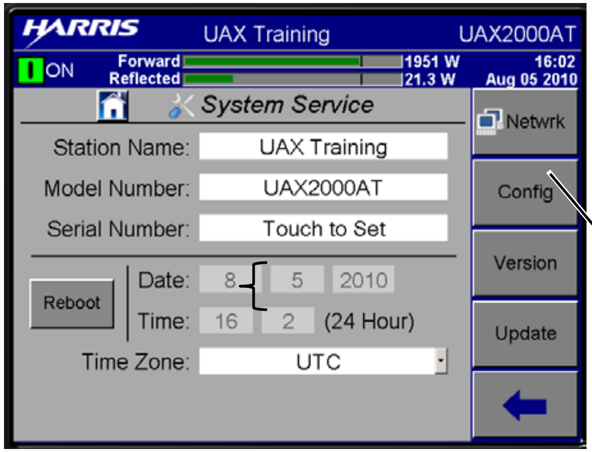
Refer to these screens when working with Harris field service.

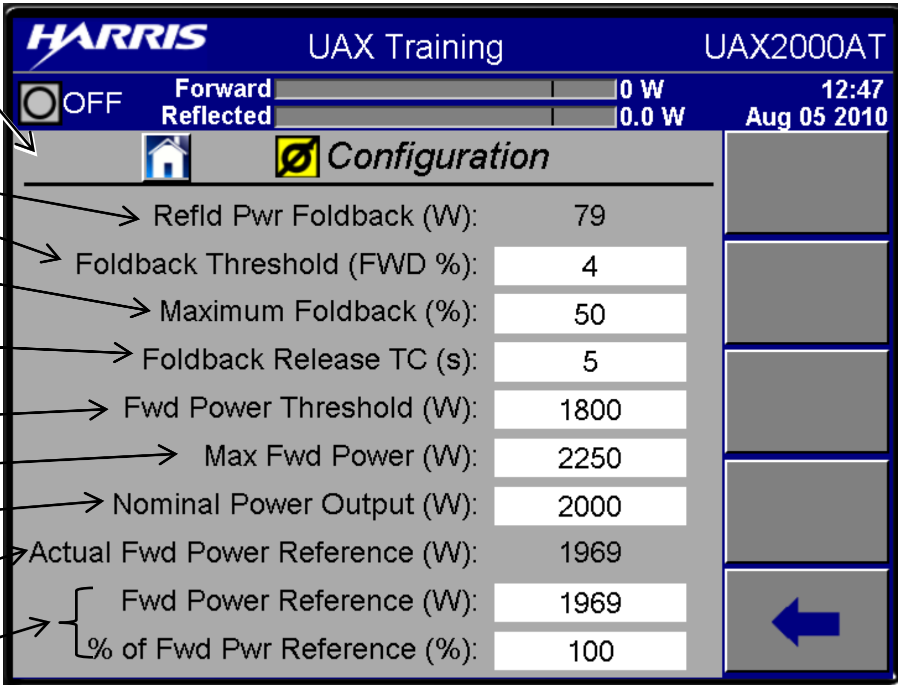


These Config settings go out LPU's.

See details on next slide.







Reflected power that will initiate foldback (1-4%). 4% is around 1.5:1 VSWR

How far will Tx foldback 50-100%. 100% foldback = zero watts output

How long Tx stay in foldback 5 - 120 seconds. Tries to increase power in 20% increments.

Level of low power output warning – yellow bar. 80% typ.

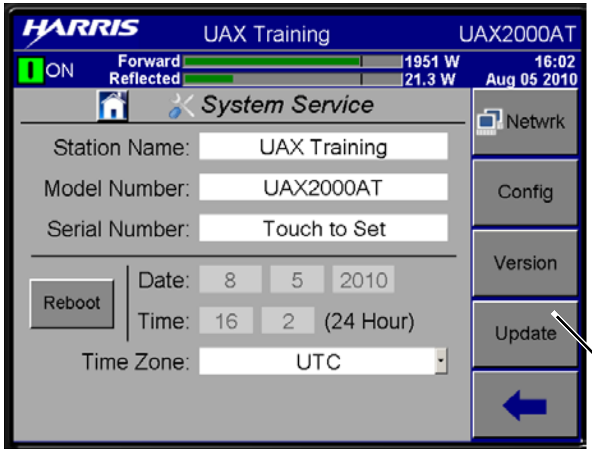
Level of high power output warning – red bar

Sets 100% power output level on bar

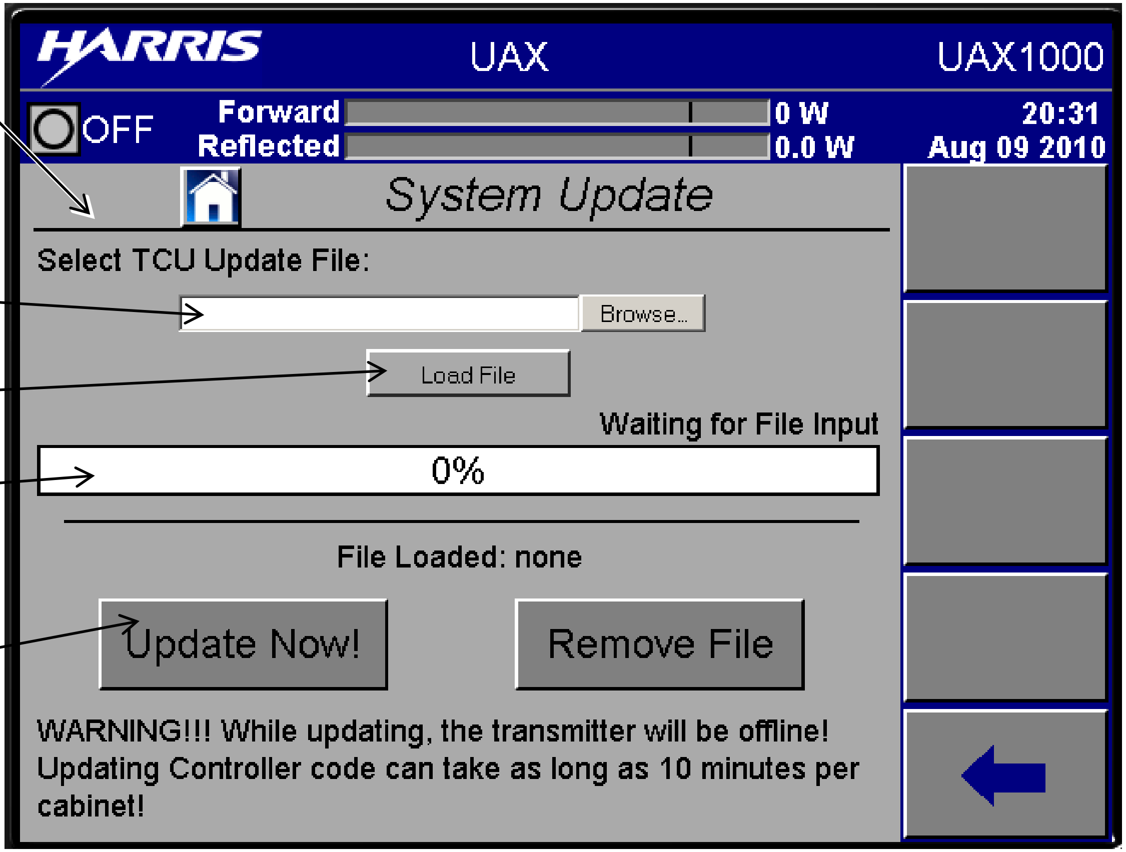
Power setting in active LPU. May be lower than Fwd Power Ref. if bad module or in foldback.

Set desired TPO (W) here. Set desired TPO % here (0-100%). Limited by Nominal Power Out

TCU System Update



PCM software is upgradeable using the System Update screen. Microprocessor may need to be changed for some updates. MCM updates via flash card.



Browse for .tcu filename and select.

Press Load File button to upload file to TCU.

Bar will turn green and read 100% when file is loaded.

Press Update Now to update PCM…or press Remove File to cancel the process.

861-1142-012 (861-1142-082 FLO) UAX SW, Customer I_O (JTAG, XYLINX programmer needed)

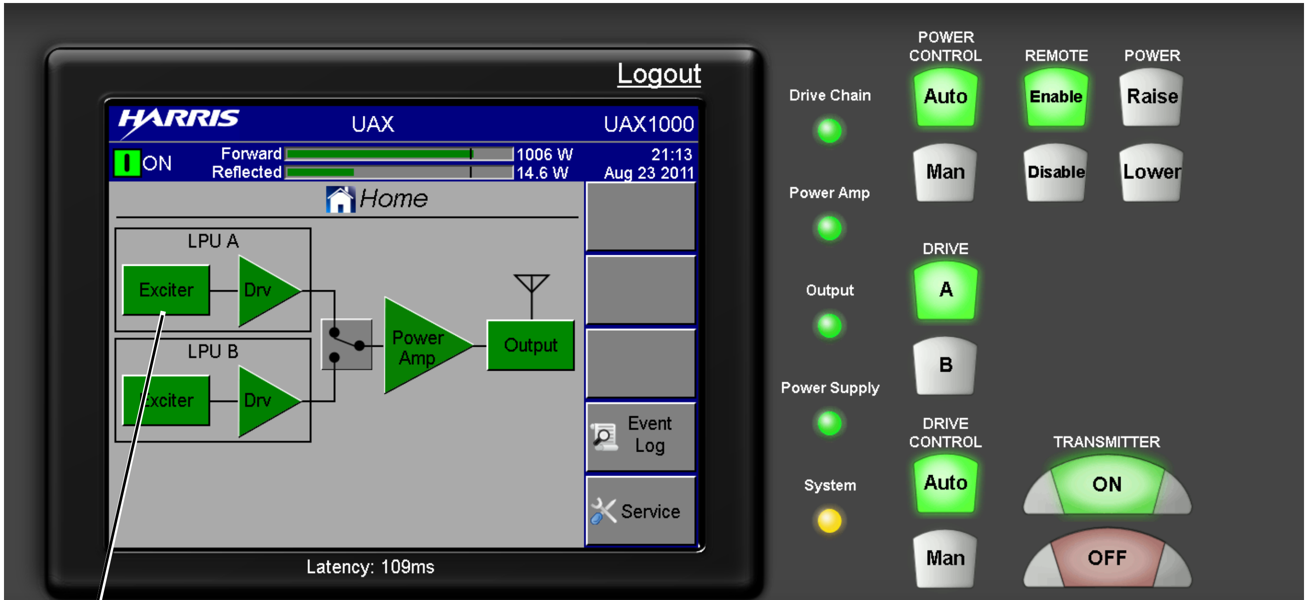
861-1142-022 (861-1142-102 FLO) UAX SW, UCP, Main Control Module (.ace file on flash card, must rename old file extension .old)

861-1142-092 (961-1142-112 FLO) UAX SW, UCP, Process Control Module (.tcu file used in Program Update)

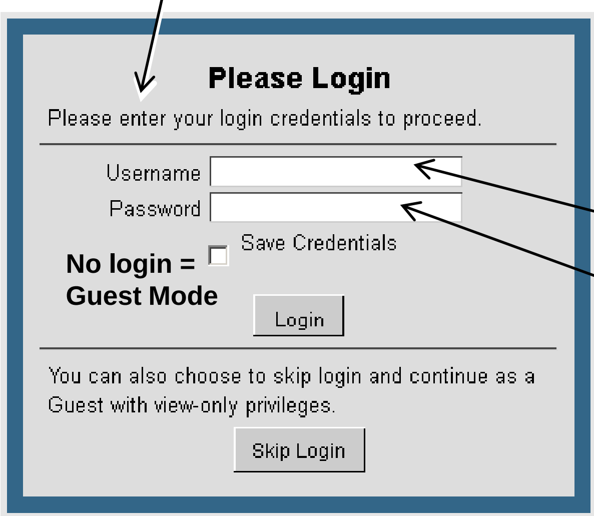
861-1142-142 (861-1142-122 FLO) UAX SW, UCP, TCU Interface (JTAG, XYLINX programmer needed)

861-1142-052 (861-1142-132 FLO) SW, UCP, Panel PC (LINUX and flash card in panel pc, use hook to remove and replace flash card)

Note: The PCM software is the only TCU software upgradeable via ISP & the web GUI. MCM may also be upgradeable via ISP in the future.



TCU Home screen Tx OFF. Exciter A selected.

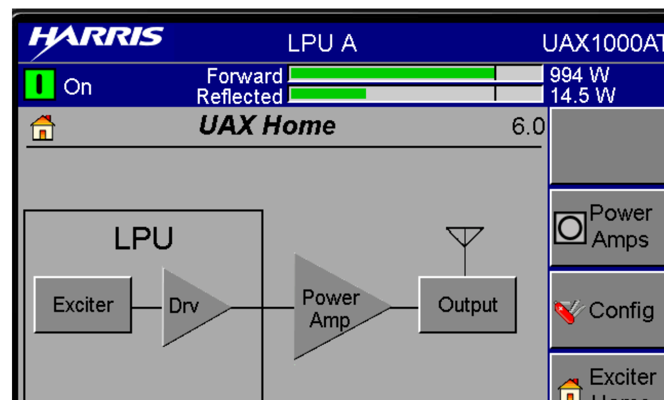


Pressing the exciter button on LPUA opens the LPU log in screen.

Username = admin

Password = admin

These are setup on the LPU using NetAdmin.



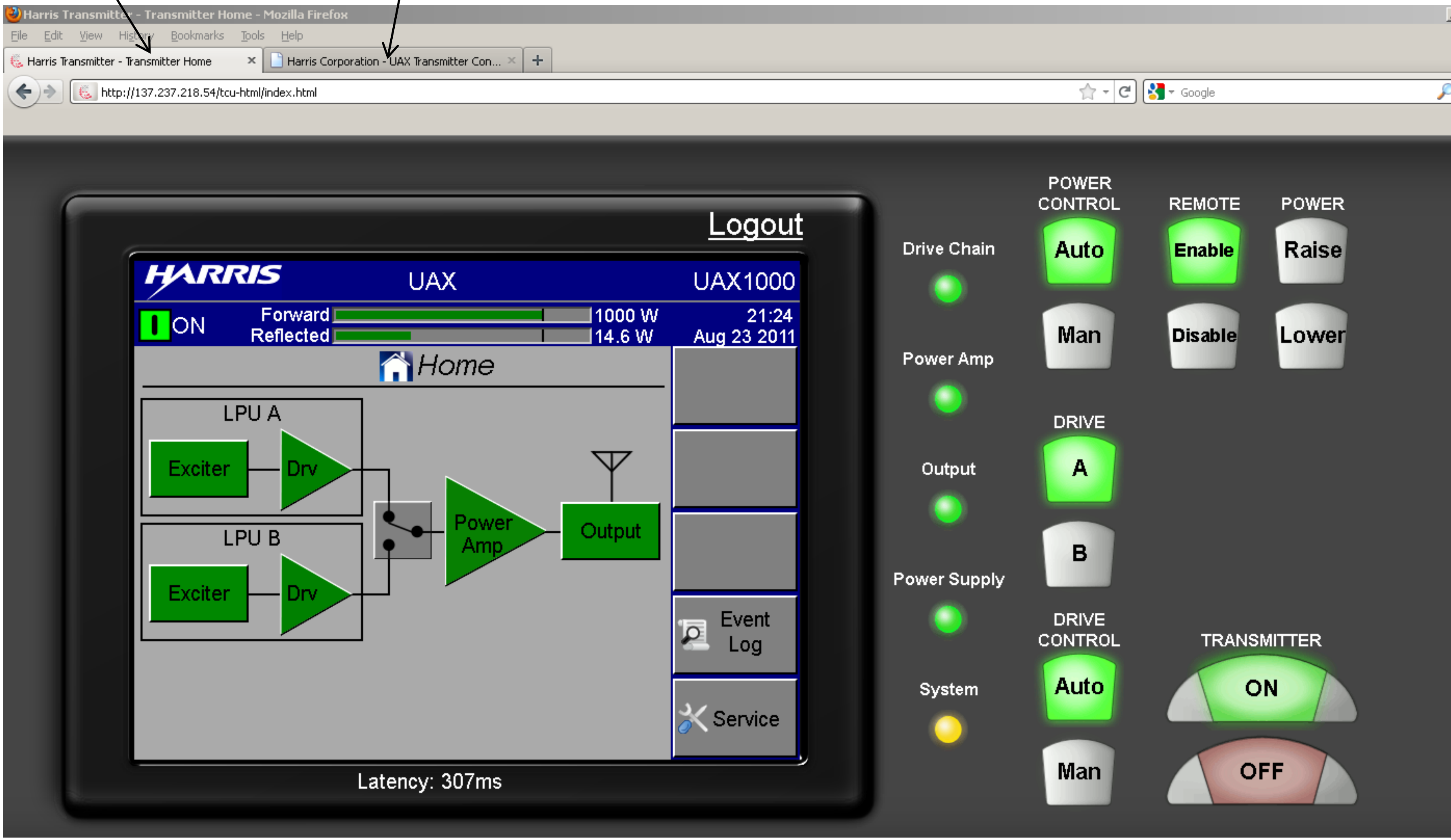
UAX Home screen opens after log-in.

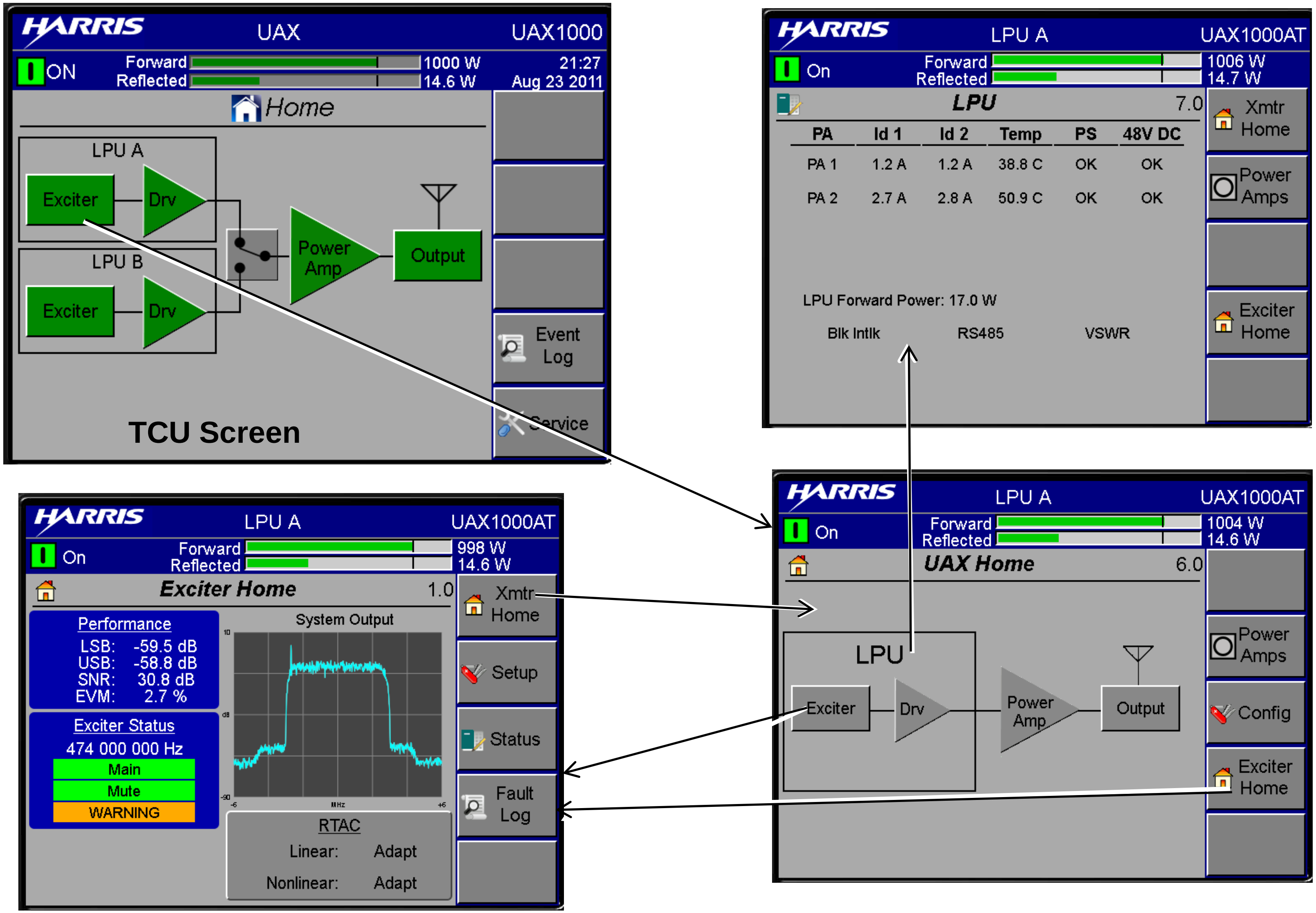
LPU Screens

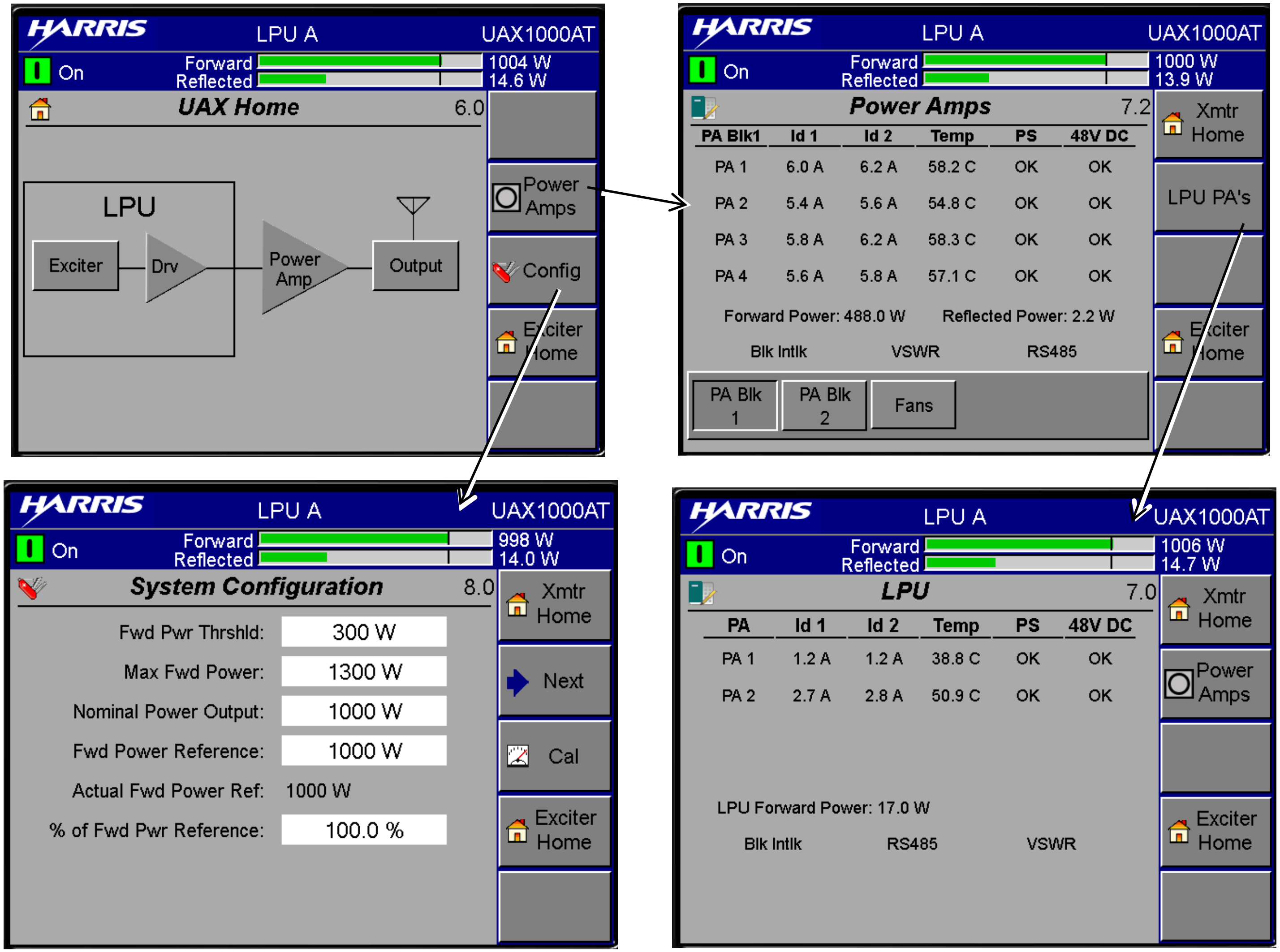
TCU tab

LPU tab

Firefox browser allows multiple tabs.




HARRIS UAX UAX1000
ON Forward 1000 W 21:27
Reflected 14.6 W Aug 23 2011
Home
LPU A
Exciter
Drv
LPU B
Exciter
Drv
Power Amp
Output
Event Log
Service
TCU Screen
HARRIS LPU A UAX1000AT
On Forward 1006 W
Reflected 14.7 W
LPU 7.0
PA Id 1 Id 2 Temp PS 48V DC
PA 1 1.2 A 1.2 A 38.8 C OK OK
PA 2 2.7 A 2.8 A 50.9 C OK OK
LPU Forward Power: 17.0 W
Blk Intlk RS485 VSWR
Xmtr Home
Power Amps
Exciter Home
HARRIS LPU A UAX1000AT
On Forward 998 W
Reflected 14.6 W
Exciter Home 1.0
Performance
LSB: -59.5 dB
USB: -58.8 dB
SNR: 30.8 dB
EVM: 2.7 %
Exciter Status
474 000 000 Hz
Main
Mute
WARNING
System Output
RTAC
Linear: Adapt
Nonlinear: Adapt
Xmtr Home
Setup
Status
Fault Log
HARRIS LPU A UAX1000AT
On Forward 1004 W
Reflected 14.6 W
UAX Home 6.0
LPU
Exciter
Drv
Power Amp
Output
Power Amps
Config
Exciter Home



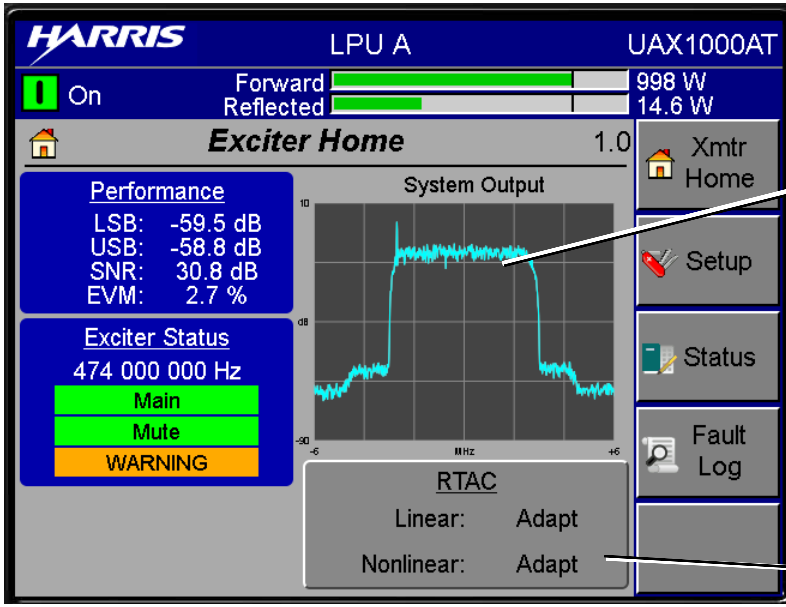
All fans in PAB run at same speeds.

PAB fans can be changed while on-air.

PA module temp max is 90ºC. Warning at 115ºC.

No ambient temp trip point.

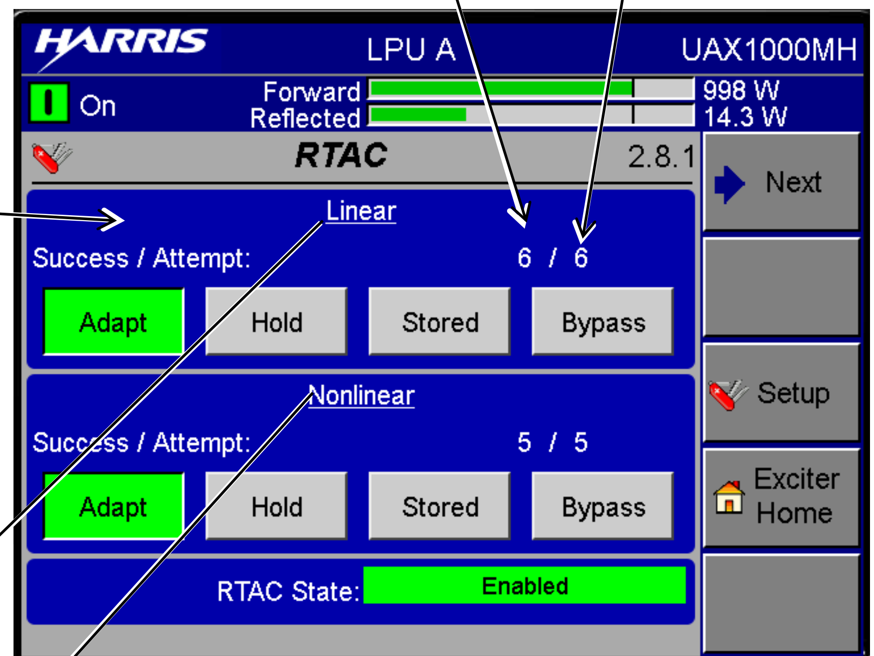
FET current Id1 & 2 max 14A



Post RTAC output after mask filter. Signal doesn't immediately disappear if signal is lost.

Successes

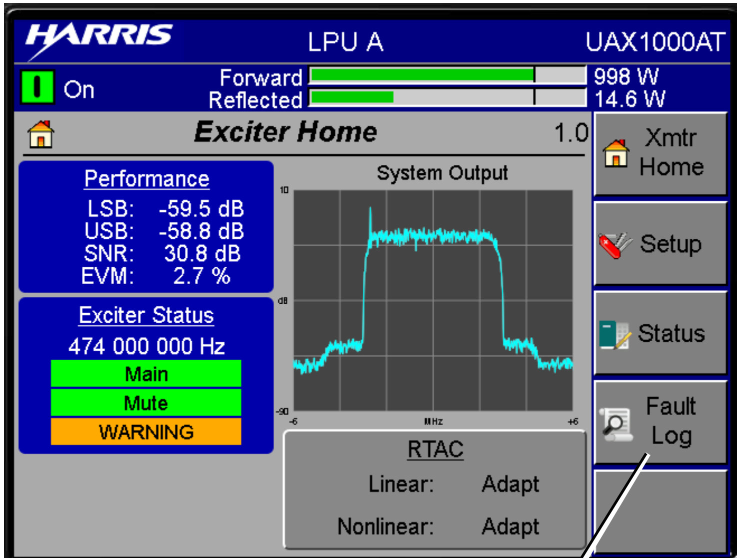
Attempts



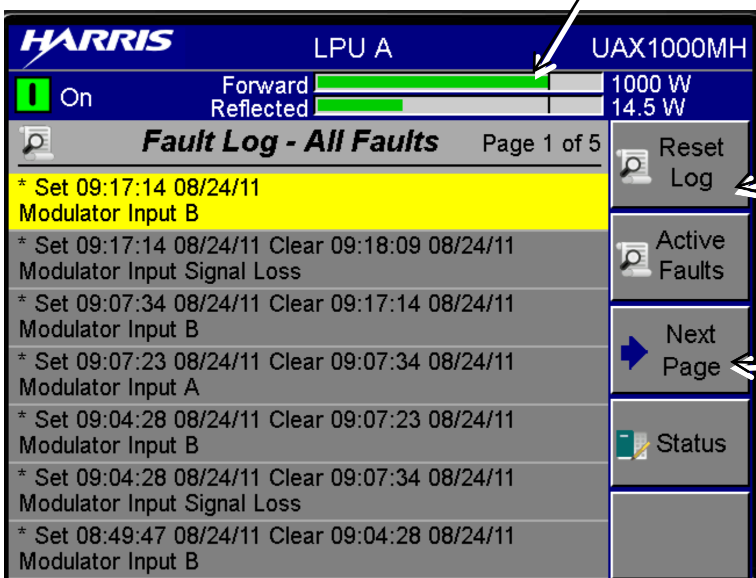
Pressing the RTAC box on the Exciter Home page opens the RTAC control screen.

Linear corrects for distortions in filter.

Nonlinear corrects for distortions in amplifier.

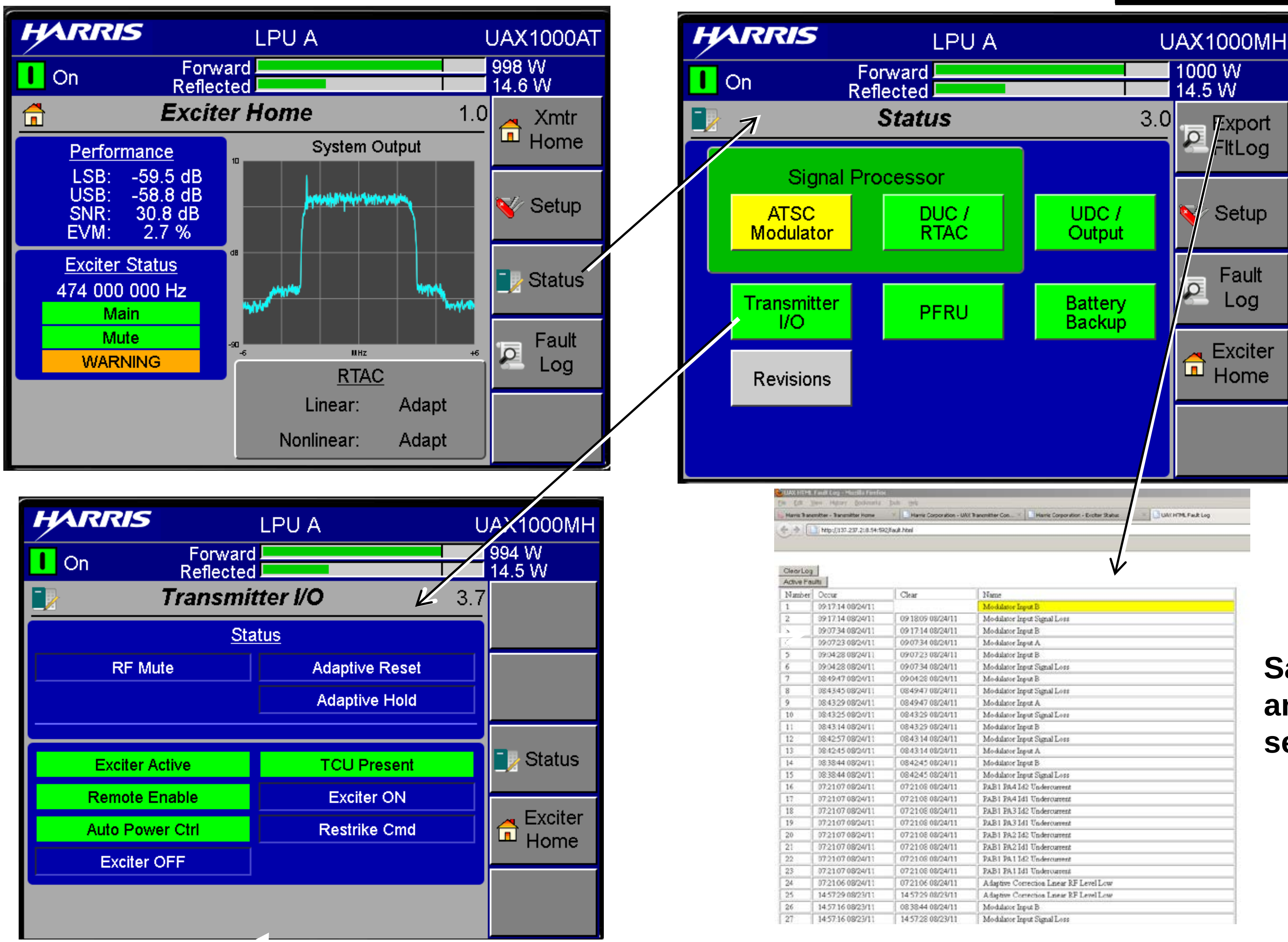


Pressing the Fault Log button opens Fault Log-All Faults screen.



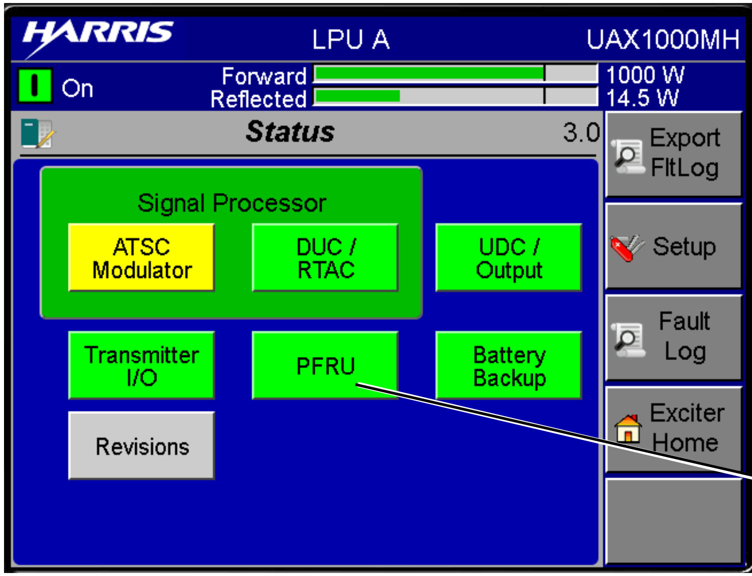
Erases all log entries. Active faults will come back.

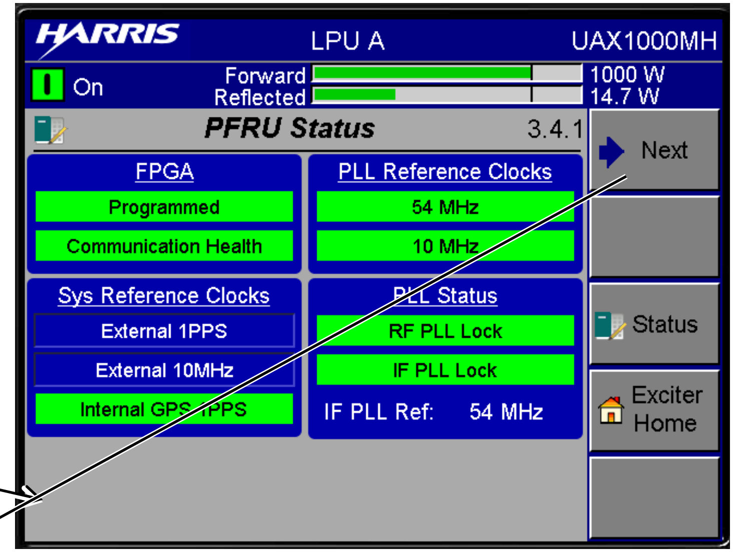
Displays only active faults. All faults will return if pressed again.

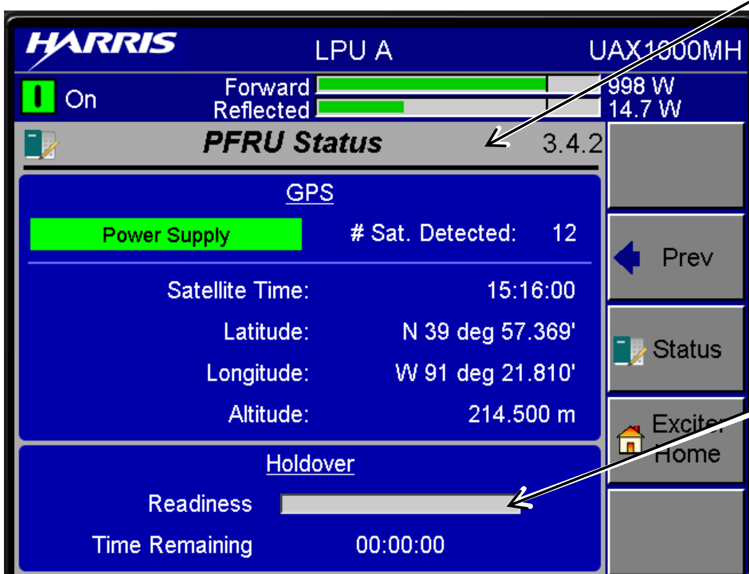


Save Page As and email to service.

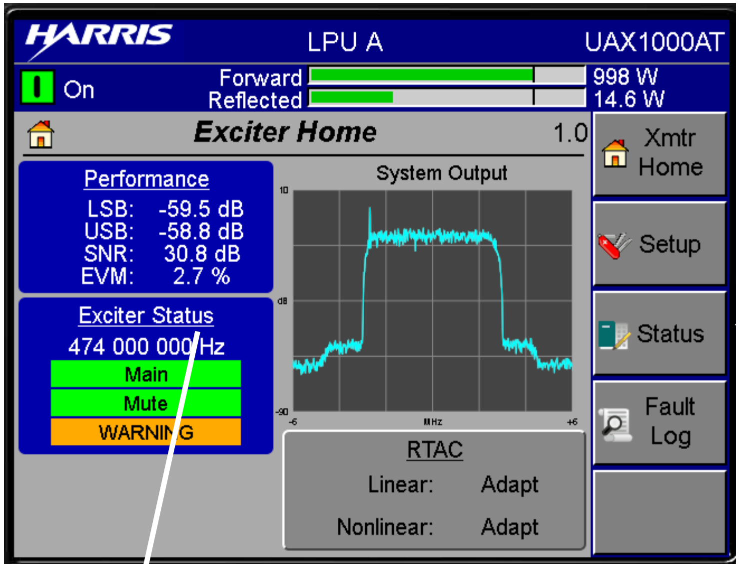
LPU Status Pages

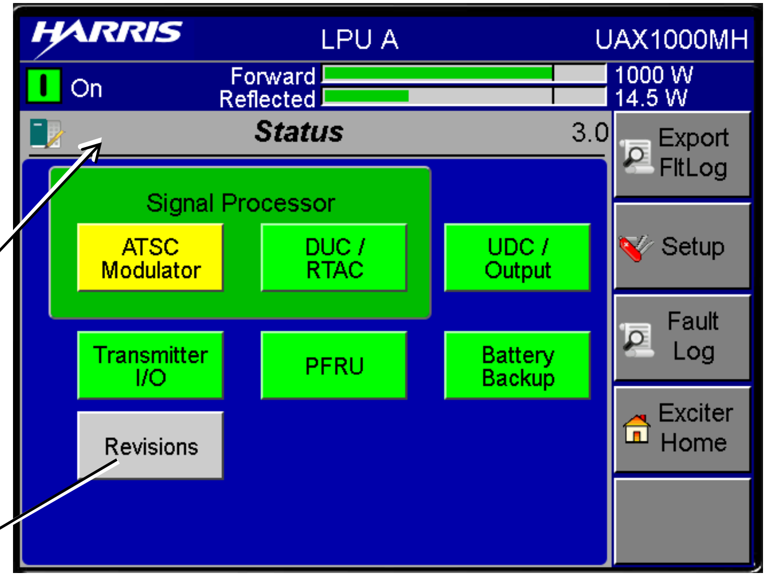


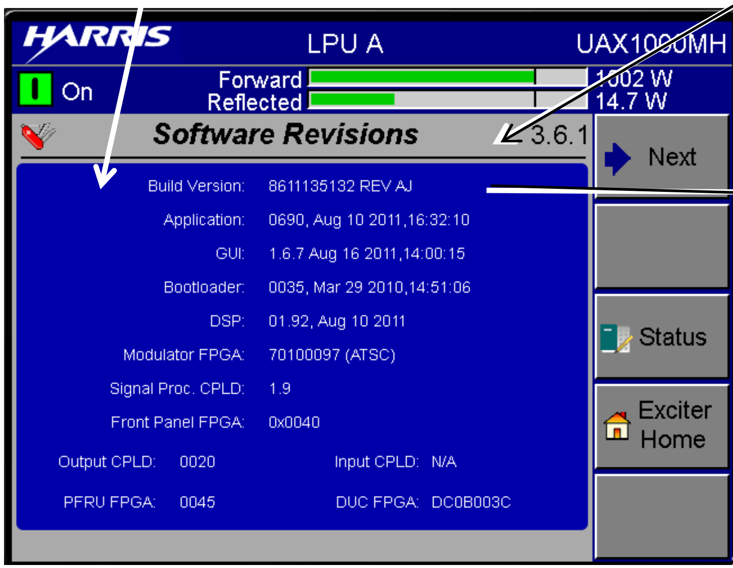




Holdover = time remaining till shutdown if GPS is lost.

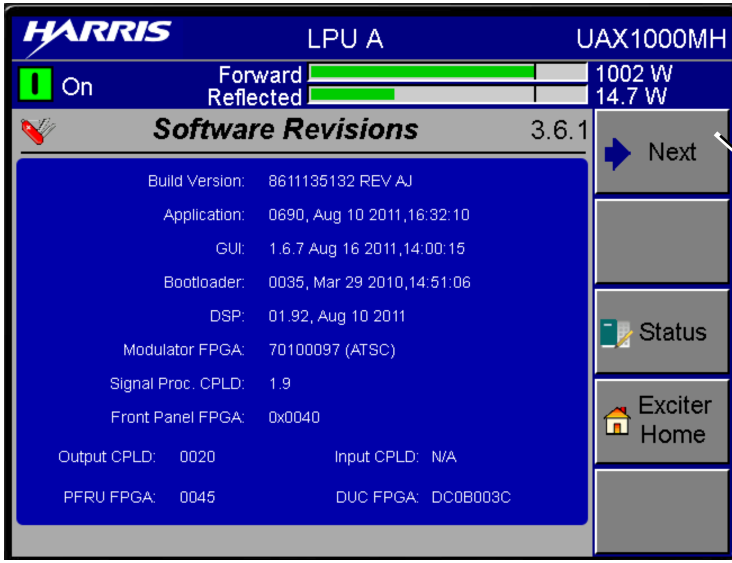


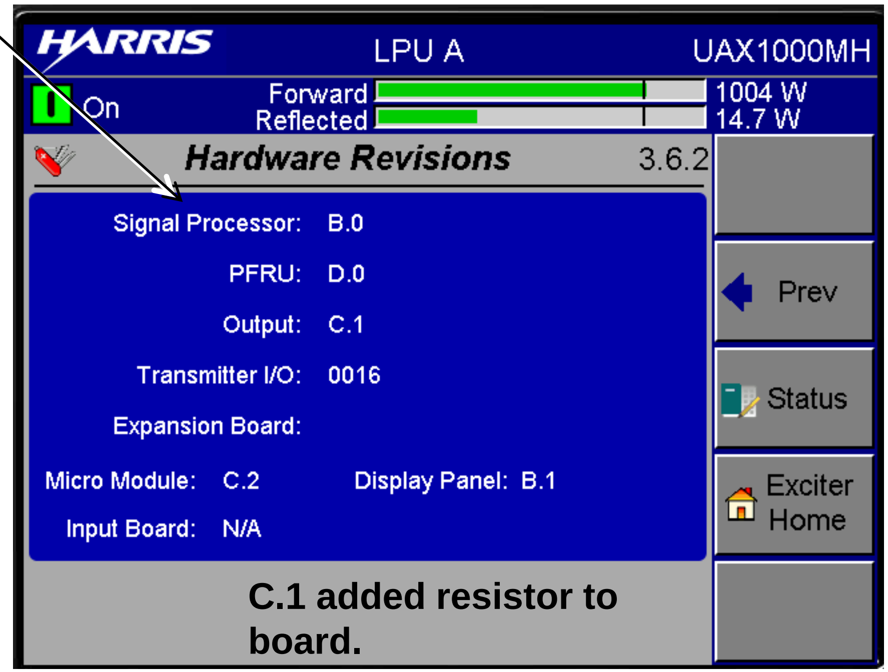




Build Version should appear as shown (part # REV#). If the LPU does not have all the proper software revisions installed for a particular build then "Customer Special" will be displayed.

The full build should be installed when updating software. The full build contains all matching software components.

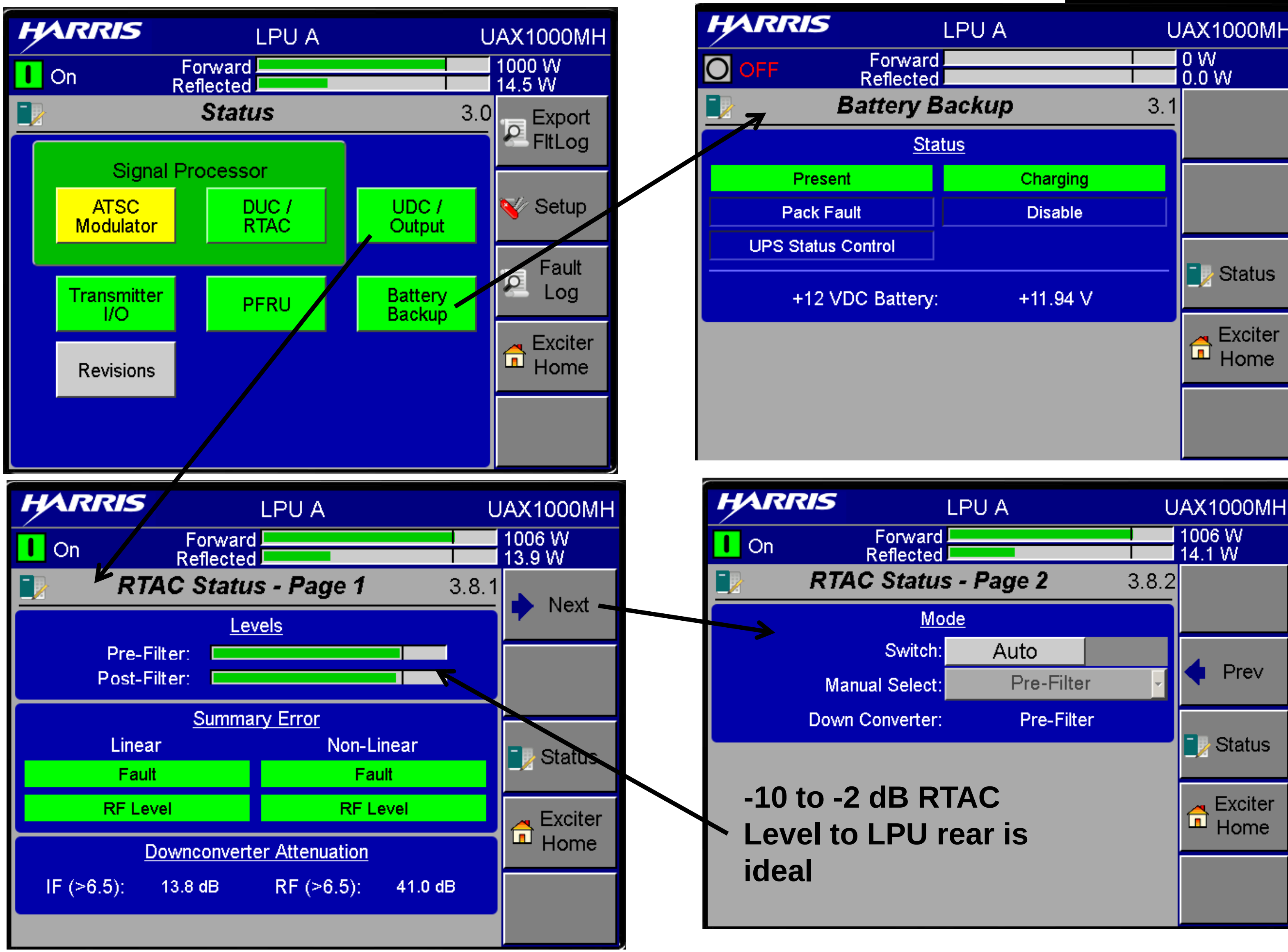




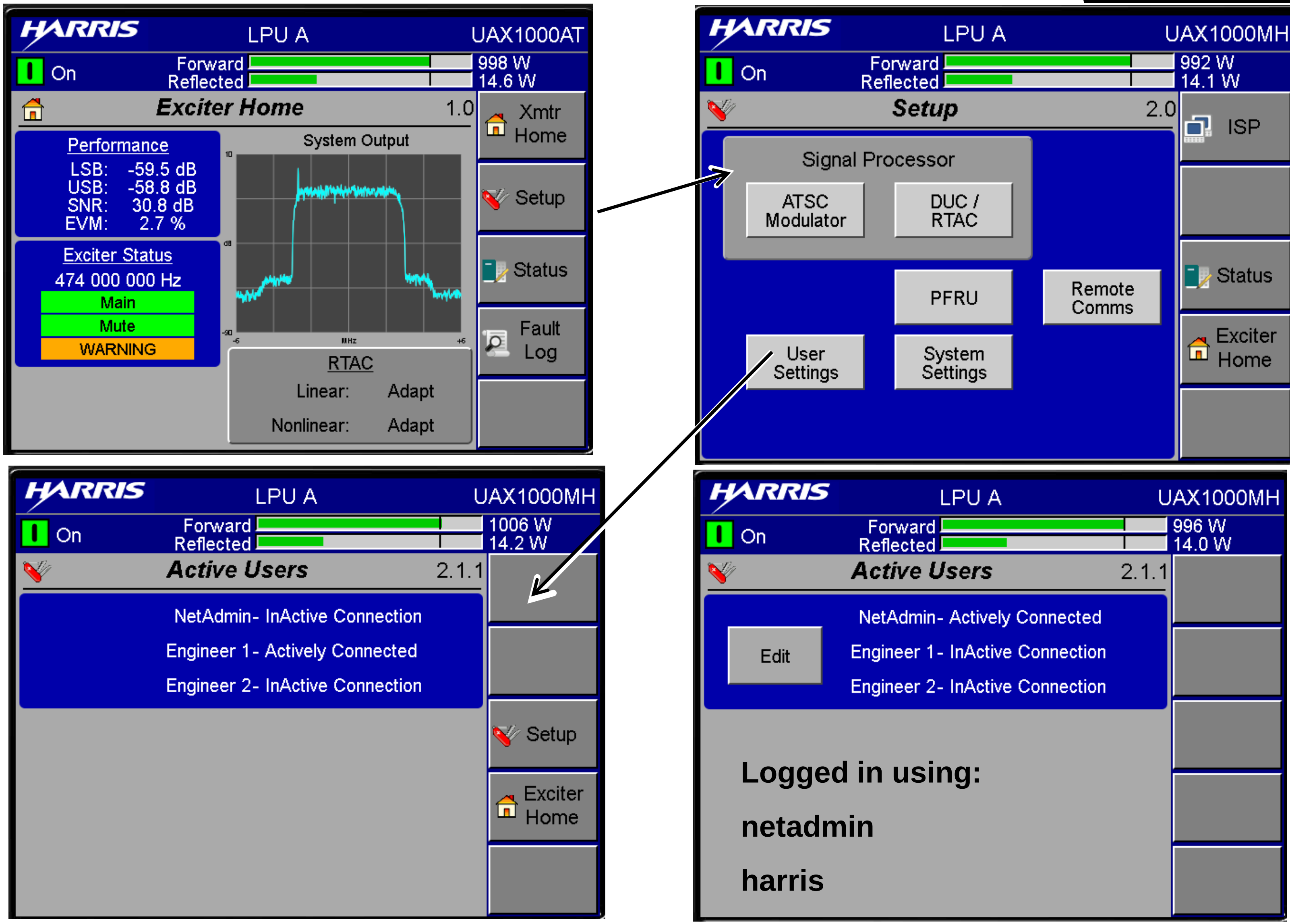
C.1 added resistor to board.

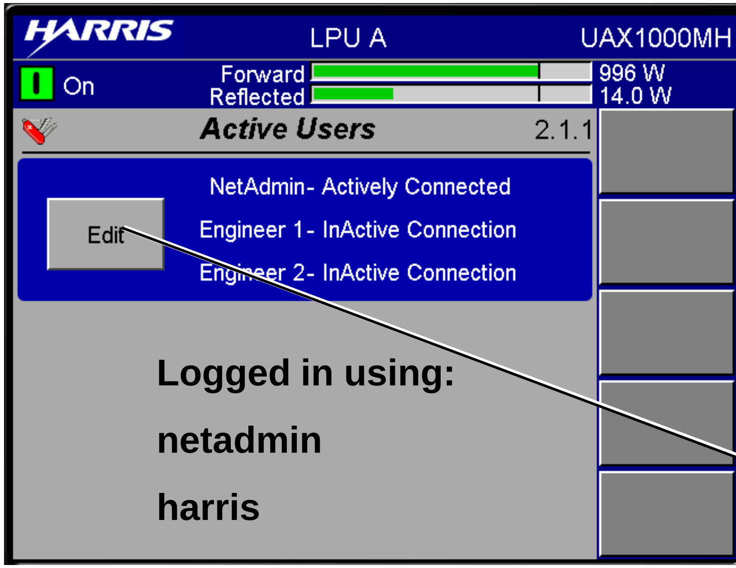
Expansion board used for DVBT-2.

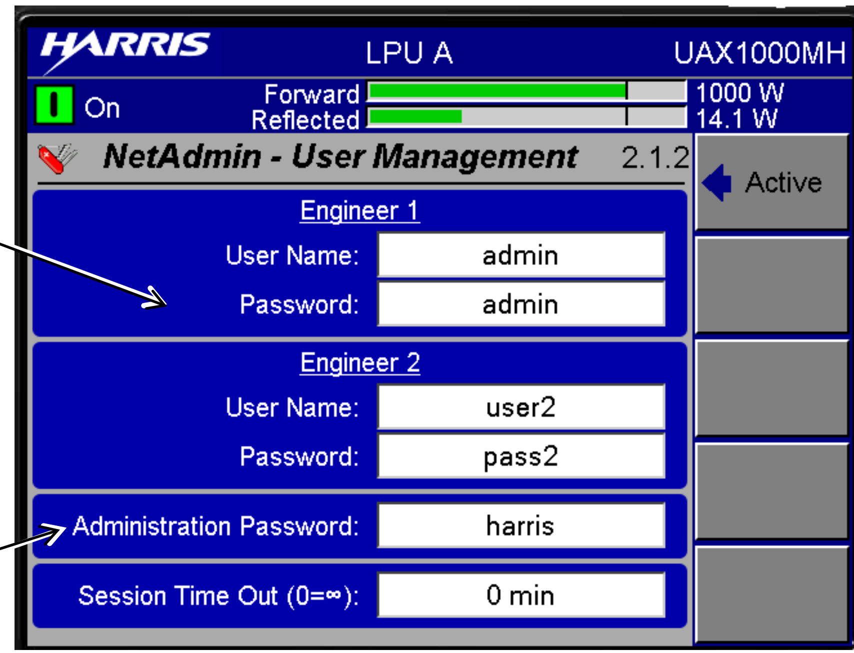
LPU Status Pages



LPU Setup and User Settings Pages



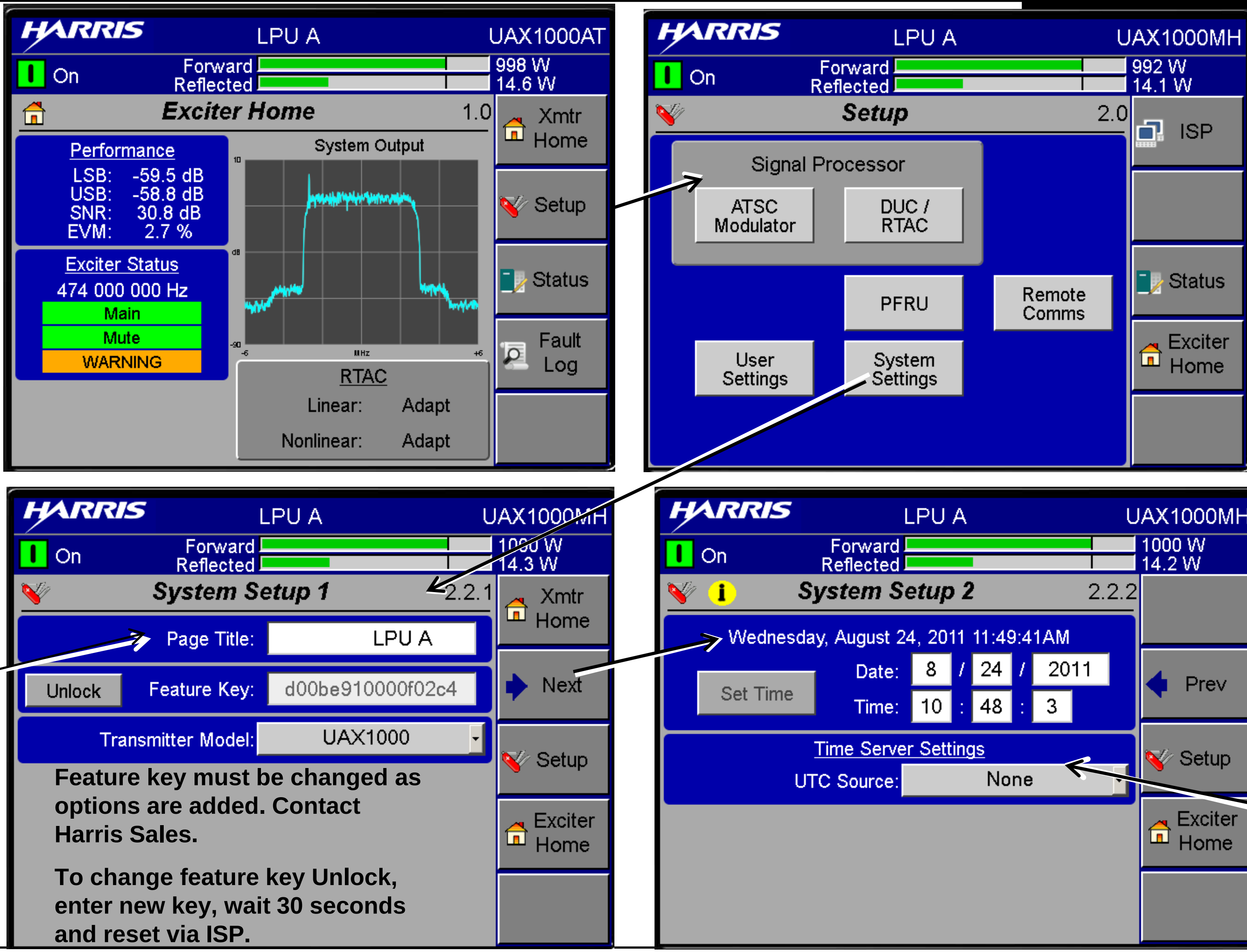




Can't change NetAdmin login or password via GUI. Use serial port on rear of LPU and Teraterm to change them.

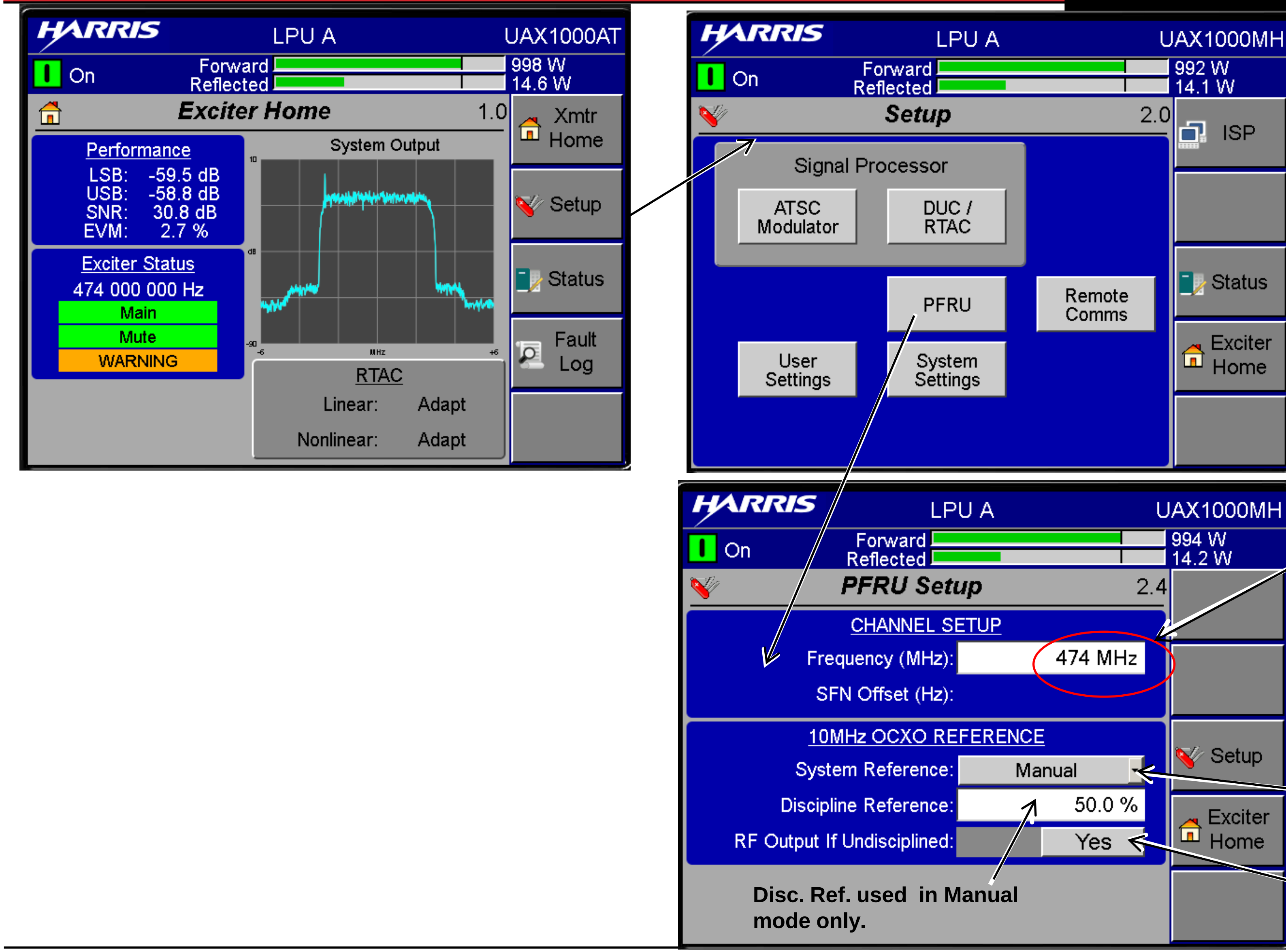
Must log out to exit.

LPU Setup and System Settings



Main header for each LPU page

Time Server Settings:
None
GPS
NTP

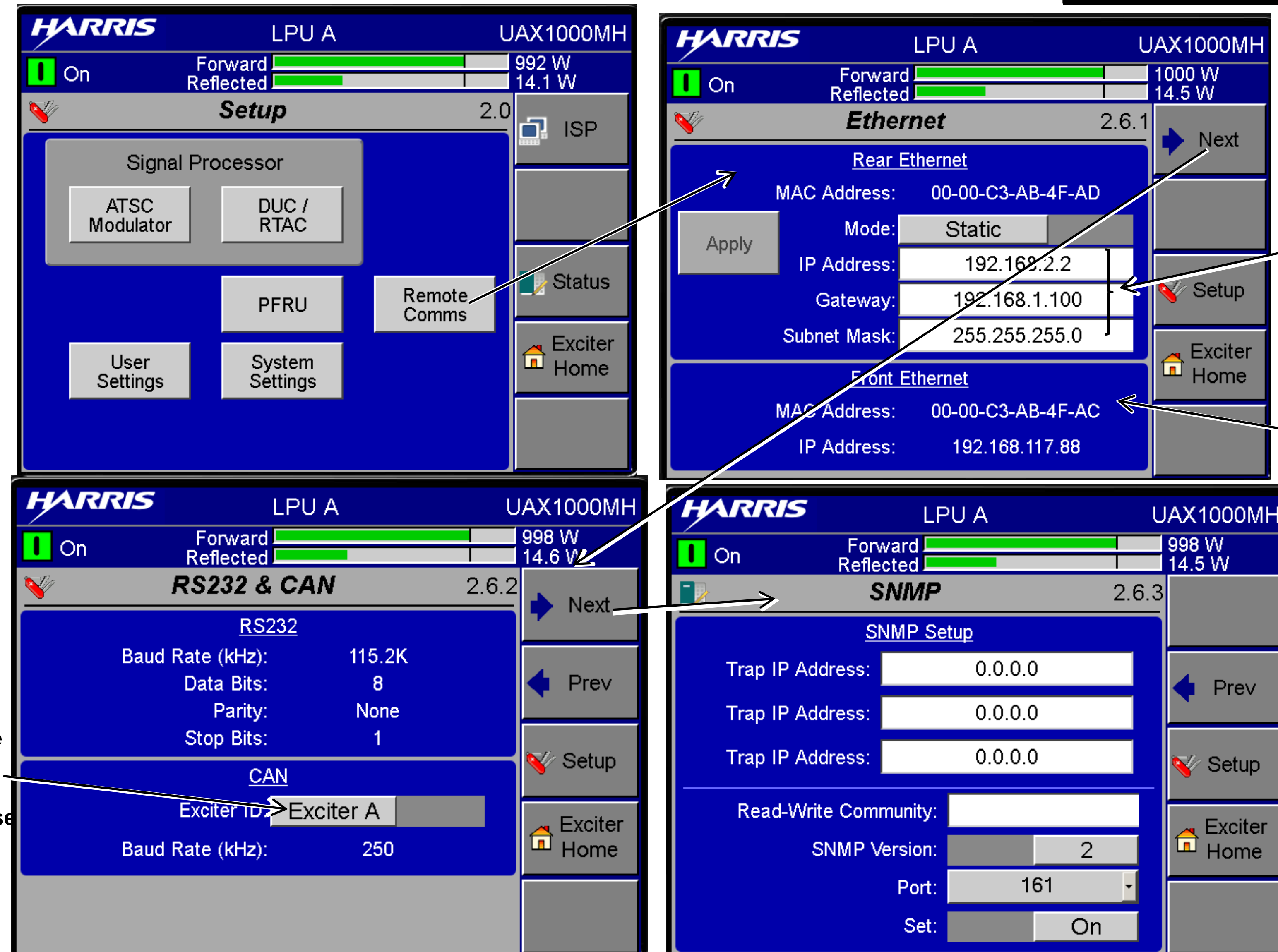


Set new frequency here if no TCU. New F requires Cal.

Only GPS & 1PPS in SFN.

Yes best.

HARRIS



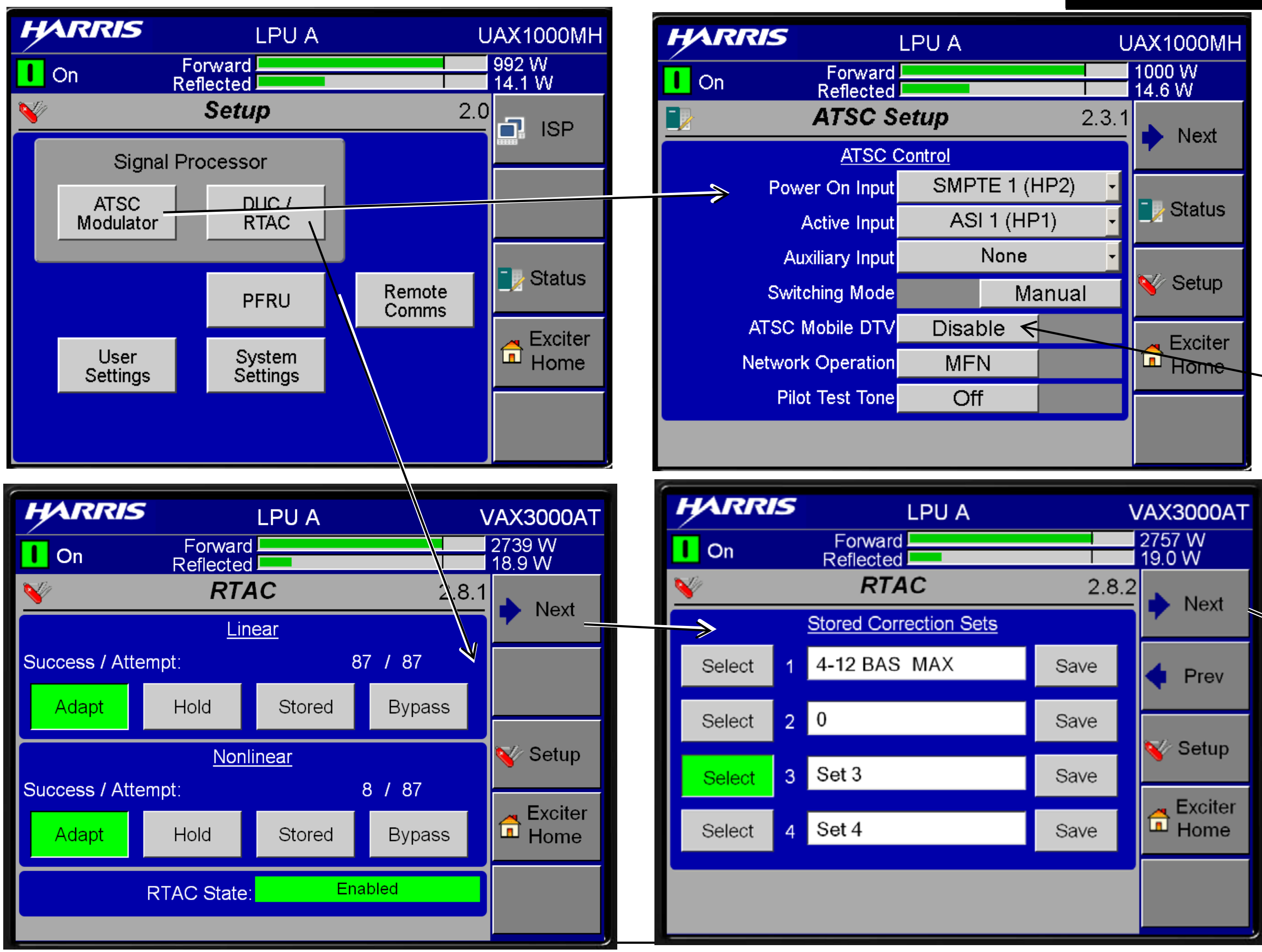
Set for LPU A.

LPU B uses .3 IP

Need front MAC address for new feature key.

Can't be set same on both LPU's. Will cause LPU's to cycle ON/OF.

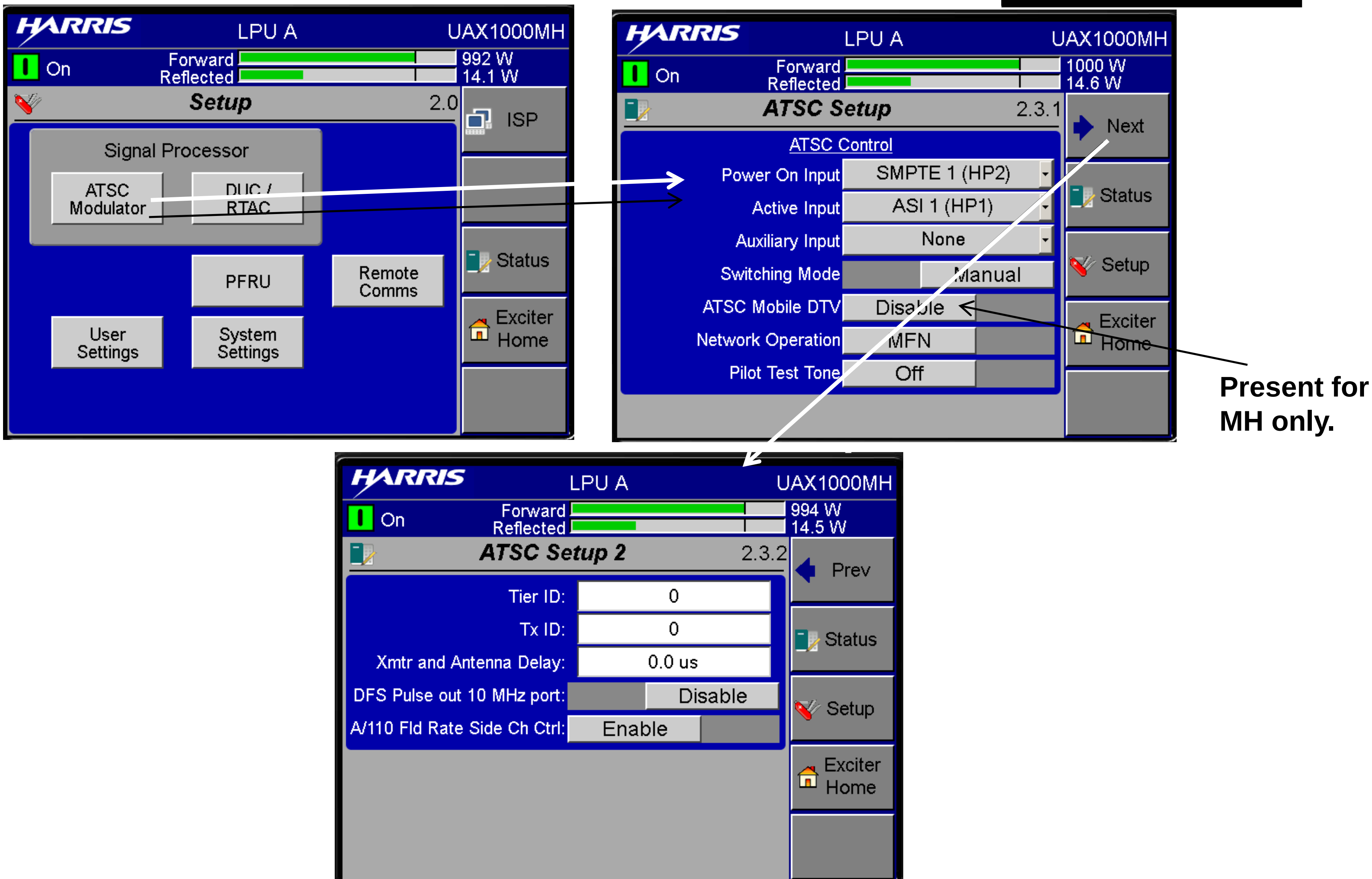
LPU Setup ATSC Modulator Screens



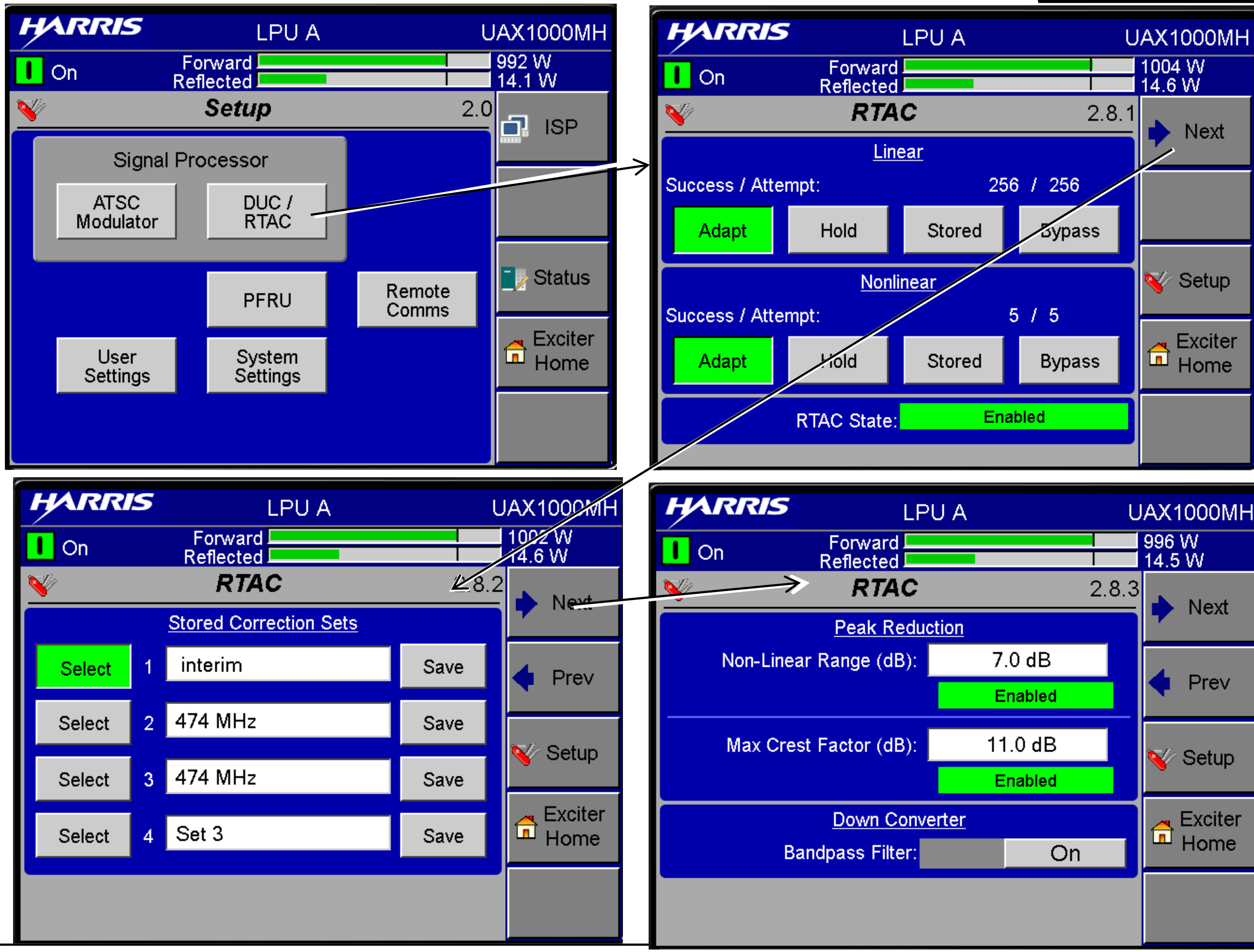
Present for MH only.

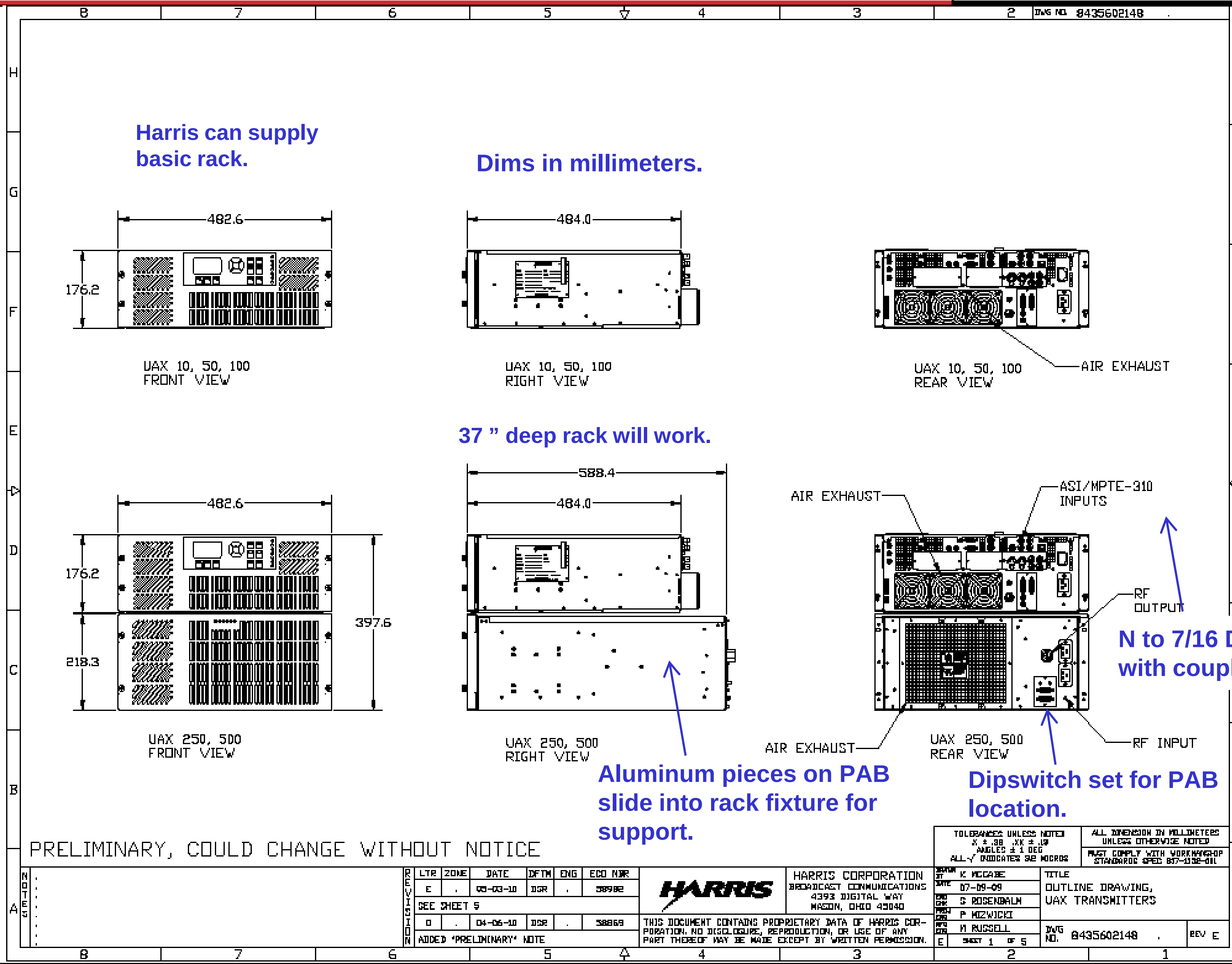
Next Page

LPU Setup ATSC Modulator Screens



LPU Setup *ATSC* Modulator Screens





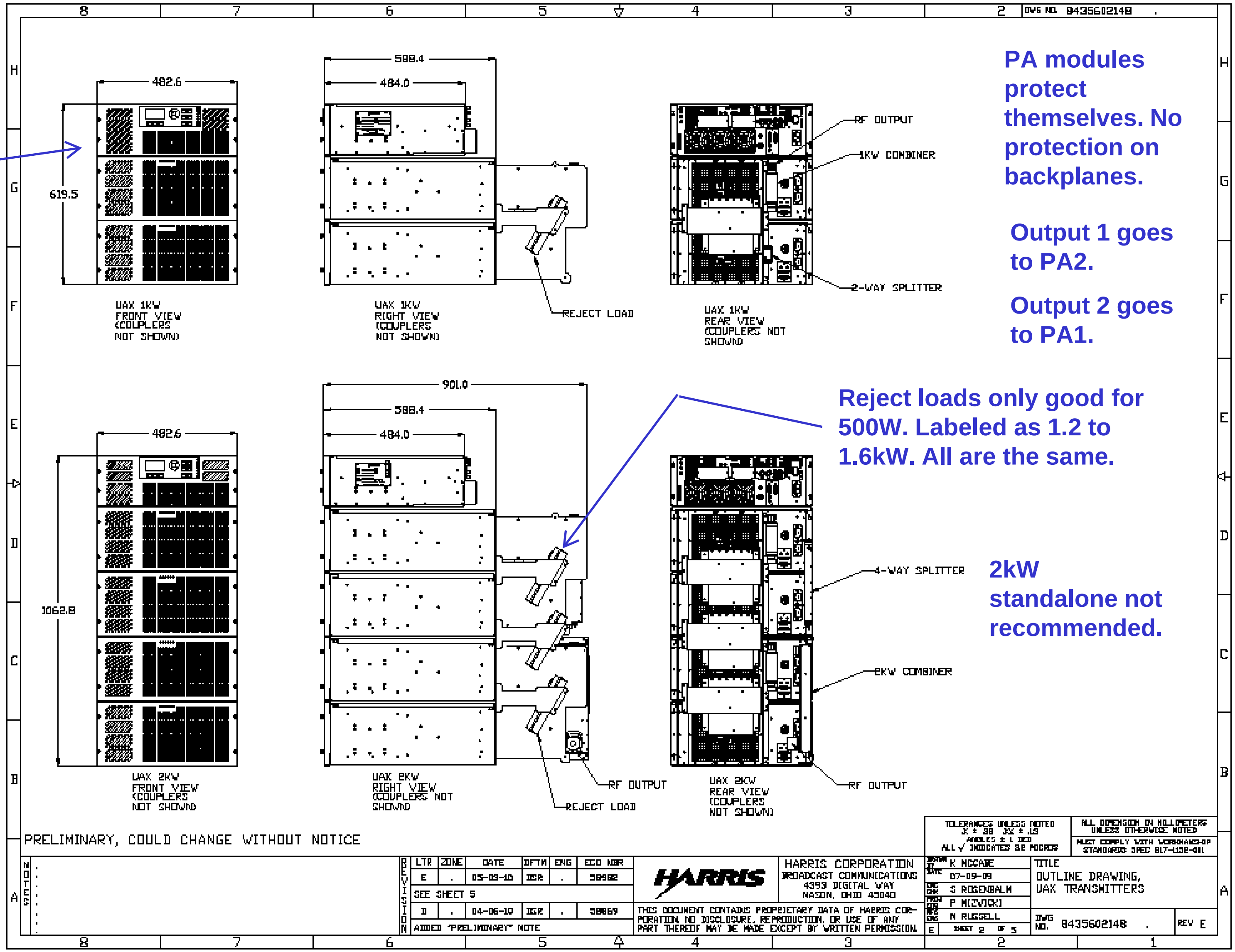
Harris can supply basic rack.
Dims in millimeters.
482.6
176.2
UAX 10, 50, 100 FRONT VIEW
484.0
UAX 10, 50, 100 RIGHT VIEW
UAX 10, 50, 100 REAR VIEW
AIR EXHAUST
37 " deep rack will work.
588.4
397.6
218.3
UAX 250, 500 FRONT VIEW
UAX 250, 500 RIGHT VIEW
ASI/MPTE-310 INPUTS
RF OUTPUT
N to 7/16 Din with coupler.
RF INPUT
UAX 250, 500 REAR VIEW
Aluminum pieces on PAB slide into rack fixture for support.
Dipswitch set for PAB location.
PRELIMINARY, COULD CHANGE WITHOUT NOTICE
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
4393 DIGITAL WAY
MASON, OHIO 45040
OUTLINE DRAWING, UAX TRANSMITTERS
8435602148
SEE SHEET 5
ADDED "PRELIMINARY" NOTE

HARRIS

Could be stand alone but rack recommended.

952-9248-072 PA bypass cable. Used to keep operating with removed PAB.

Can't do a cal if PA module or PAB is faulted.



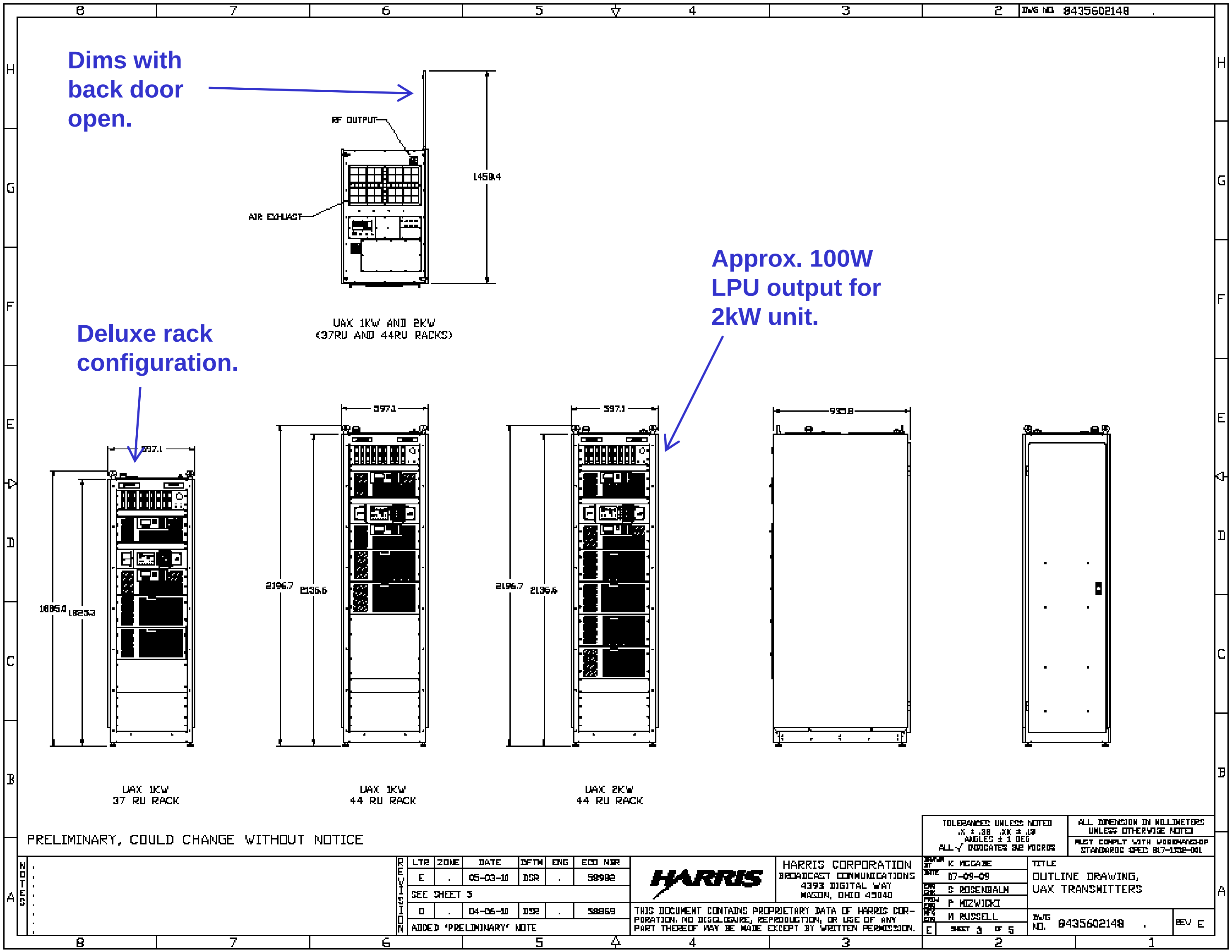
PA modules protect themselves. No protection on backplanes.

Output 1 goes to PA2.

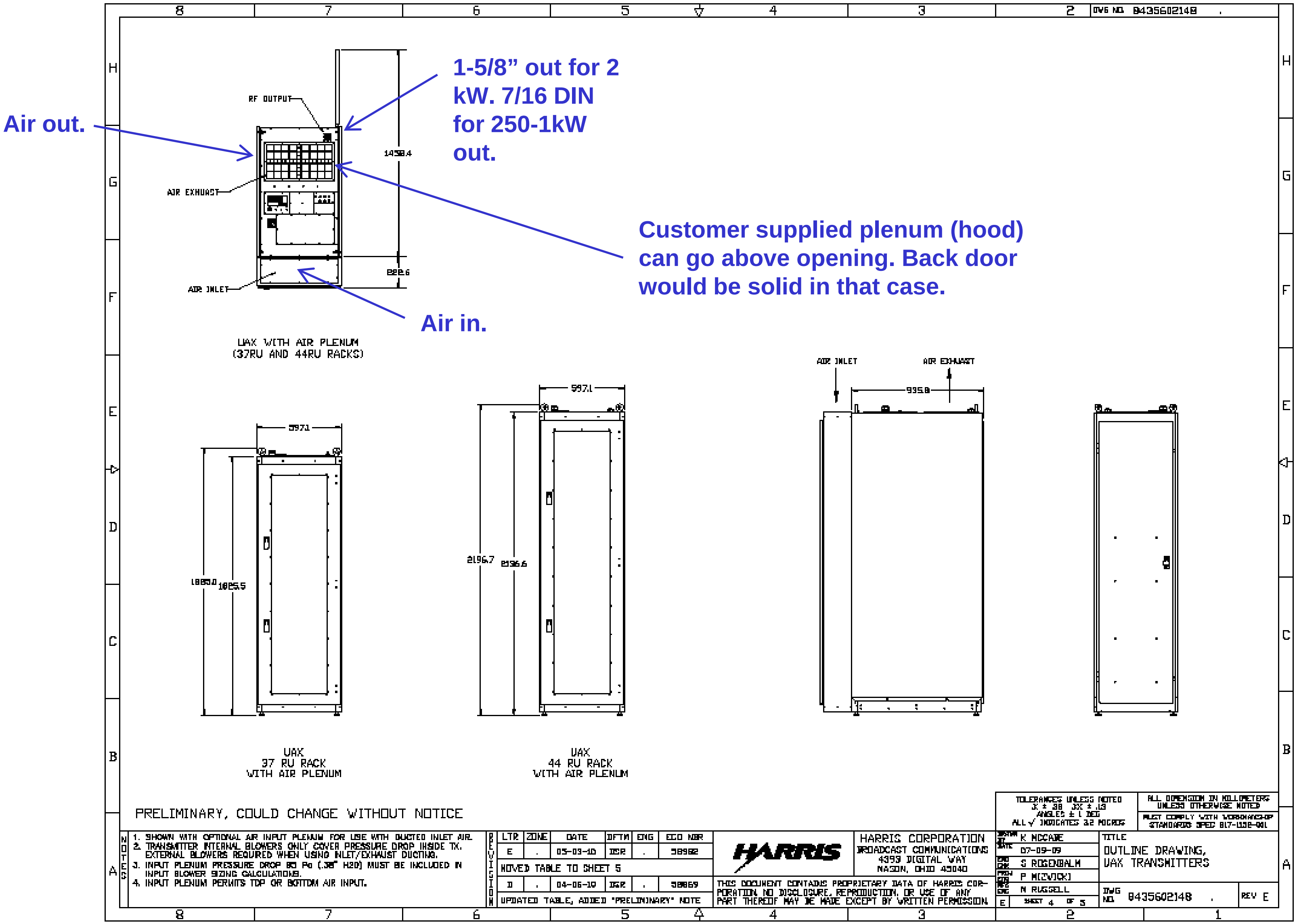
Output 2 goes to PA1.

Reject loads only good for 500W. Labeled as 1.2 to 1.6kW. All are the same.

2kW standalone not recommended.



Dims with back door open.
Deluxe rack configuration.
Approx. 100W LPU output for 2kW unit.
RF OUTPUT
AIR EXHAUST
1458.4
UAX 1KW AND 2KW (37RU AND 44RU RACKS)
597.1
935.8
1885.4
1825.3
2196.7
2136.6
UAX 1KW 37 RU RACK
UAX 1KW 44 RU RACK
UAX 2KW 44 RU RACK
PRELIMINARY, COULD CHANGE WITHOUT NOTICE
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
4393 DIGITAL WAY
MASON, OHIO 45040
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ALL DIMENSION IN MILLIMETERS UNLESS OTHERWISE NOTED
TITLE
OUTLINE DRAWING, UAX TRANSMITTERS
DWG NO. 8435602148
REV E
SEE SHEET 3
ADDED "PRELIMINARY" NOTE


Air out.
1-5/8” out for 2 kW. 7/16 DIN for 250-1kW out.
Customer supplied plenum (hood) can go above opening. Back door would be solid in that case.
Air in.
RF OUTPUT
AIR EXHAUST
AIR INLET
UAX WITH AIR PLENUM
(37RU AND 44RU RACKS)
UAX
37 RU RACK
WITH AIR PLENUM
UAX
44 RU RACK
WITH AIR PLENUM
PRELIMINARY, COULD CHANGE WITHOUT NOTICE
NOTES
1. SHOWN WITH OPTIONAL AIR INPUT PLENUM FOR USE WITH DUCTED INLET AIR.
2. TRANSMITTER INTERNAL BLOWERS ONLY COVER PRESSURE DROP INSIDE TX. EXTERNAL BLOWERS REQUIRED WHEN USING INLET/EXHAUST DUCTING.
3. INPUT PLENUM PRESSURE DROP 80 Pa (.35" H2O) MUST BE INCLUDED IN INPUT BLOWER SIZING CALCULATIONS.
4. INPUT PLENUM PERMITS TOP OR BOTTOM AIR INPUT.
E 05-03-10 DCR 58962
MOVED TABLE TO SHEET 5
D 04-06-10 DGR 58869
UPDATED TABLE, ADDED "PRELIMINARY" NOTE
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
4393 DIGITAL WAY
MASON, OHIO 45040
OUTLINE DRAWING,
UAX TRANSMITTERS
8435602148

DWG NO. 8435602148 .

DIGITAL		UAX10	UAX50	UAX100	UAX250	UAX500	UAX1000	UAX2000
RF OUTPUT POWER (W)		10W	50W	100W	250W	500W	1000W	2000W
AC CONSUMPTION (W)		840	960	1080	4992	6656	9984	16640
NOMINAL AVG LINE CURRENT (A)	DELTA	10	11	12	11	18	20	38
	WYE	6.3	6.9	7.6	6.9	11.4	12.6	24
SUGGESTED BREAKER SIZE (A)	DELTA	20	20	20	20	40	40	80
	WYE	15	15	15	15	20	20	40
MIN COPPER WIRE SIZE (mm2)	DELTA	4	4	4	4	10	10	25
	WYE	2.5	2.5	2.5	2.5	4	4	10
MIN COPPER WIRE SIZE (AWG)	DELTA	12	12	12	12	8	8	2
	WYE	14	14	14	14	12	12	8
WEIGHT, FULLY LOADED 44RU RACK W/O FILTER (MAX) (KGS/LBS)		193/425 (LPU ONLY)			188/415	196/432	225/496	283/624

ANALOG		UAX15	UAX75	UAX150	UAX375	UAX750	UAX1500	UAX3000
RF OUTPUT POWER (W)		10W	50W	100W	250W	500W	1000W	2000W
AC CONSUMPTION (W)		840	960	1080	4992	6656	9984	16640
NOMINAL AVG LINE CURRENT (A)	DELTA	10	11	12	11	18	20	38
	WYE	6.3	6.9	7.6	6.9	11.4	12.6	24
SUGGESTED BREAKER SIZE (A)	DELTA	20	20	20	20	40	40	80
	WYE	15	15	15	15	20	20	40
MIN COPPER WIRE SIZE (mm2)	DELTA	4	4	4	4	10	10	25
	WYE	2.5	2.5	2.5	2.5	4	4	10
MIN COPPER WIRE SIZE (AWG)	DELTA	12	12	12	12	8	8	2
	WYE	14	14	14	14	12	12	8
WEIGHT, FULLY LOADED 44RU RACK W/O FILTER (MAX) (KGS/LBS)		193/425 (LPU ONLY)			188/415	196/432	225/496	283/624

Values not accurate. Breakers & wire sizes close. Weights ok.

ATSC	RATED RF OUTPUT POWER (W)	TOTAL TRANSMITTER RF POWER (W)	TOTAL POWER (W)		DISSIPATED POWER TO AIR (W)		AIR FLOW (CFM)	PRESSURE AT PLENUM INLET (H2O)	PRESSURE AT CABINET OUTLET (H2O)
	10	15	500		485		303	-	-
	100	125	1214		1089		303	-	-
	500	625	3956		3331		683	-	-
	1000	1250	7669		6419		1366	0.08	0.03
	2000	2500	15397		12837		2126	0.2	0.05
DVB									
	10	15	484		469		303	-	-
	100	125	1168		1043		303	-	-
	500	625	3788		3163		683	-	-
	1000	1250	7530		6280		1366	0.08	0.03
	2000	2500	15060		12560		2126	0.2	0.05
CTTB									
	10	15	500		485		303	-	-
	100	125	1168		1043		303	-	-
	500	625	3858		3233		683	-	-
	1000	1250	7530		6280		1366	0.08	0.03
	2000	2500	15060		12560		2126	0.2	0.05
CMMB									
	10	15	500		485		303	-	-
	100	125	1168		1043		303	-	-
	500	625	3858		3233		683	-	-
	1000	1250	7530		6280		1366	0.08	0.03
	2000	2500	15060		12560		2126	0.2	0.05
ATV									
			APL 100% (BLACK)	APL 50% (GRAY)	APL 100% (BLACK)	APL 50% (GRAY)			
	15	19	429	351	349	271	303	-	-
	150	188	1003	821	815	633	303	-	-
	750	938	3313	2712	2692	2091	683	-	-
	1500	1875	7233	5632	5358	3757	1366	0.08	0.03
	3000	3750	14466	11265	10716	7515	2126	0.2	0.05

Approximately 18% efficiency typical.

PRELIMINARY, COULD CHANGE WITHOUT NOTICE

NOTES
1. SHOWN WITH OPTIONAL AIR INPUT PLENUM FOR USE WITH DUCTED INLET AIR.
2. TRANSMITTER INTERNAL BLOWERS ONLY COVER PRESSURE DROP INSIDE TX. EXTERNAL BLOWERS REQUIRED WHEN USING INLET/EXHAUST DUCTING.
3. INPUT PLENUM PRESSURE DROP 95 Pa (.38" H2O) MUST BE INCLUDED IN INPUT BLOWER SIZING CALCULATIONS.
4. INPUT PLENUM PERMITS TOP OR BOTTOM AIR INPUT.

REVISION	LTR	ZONE	DATE	DFTM	ENG	ECO NBR
	E	.	03-03-10	DCR	.	38962
	ADDED THIS SHEE, MOVED TABLE FROM SHEET 4					
	.	.	.	.	.	.
	.					

HARRIS CORPORATION
BROADCAST COMMUNICATIONS
4393 DIGITAL WAY
MASON, OHIO 45040

TOLERANCES UNLESS NOTED .X ± .38 .XX ± .13 ANGLES ± 1 DEG ALL √ INDICATES 32 MICROS

ALL DIMENSION IN MILLIMETERS UNLESS OTHERWISE NOTED

MUST COMPLY WITH WORKMANSHIP STANDARDS SPEC 817-1152-001

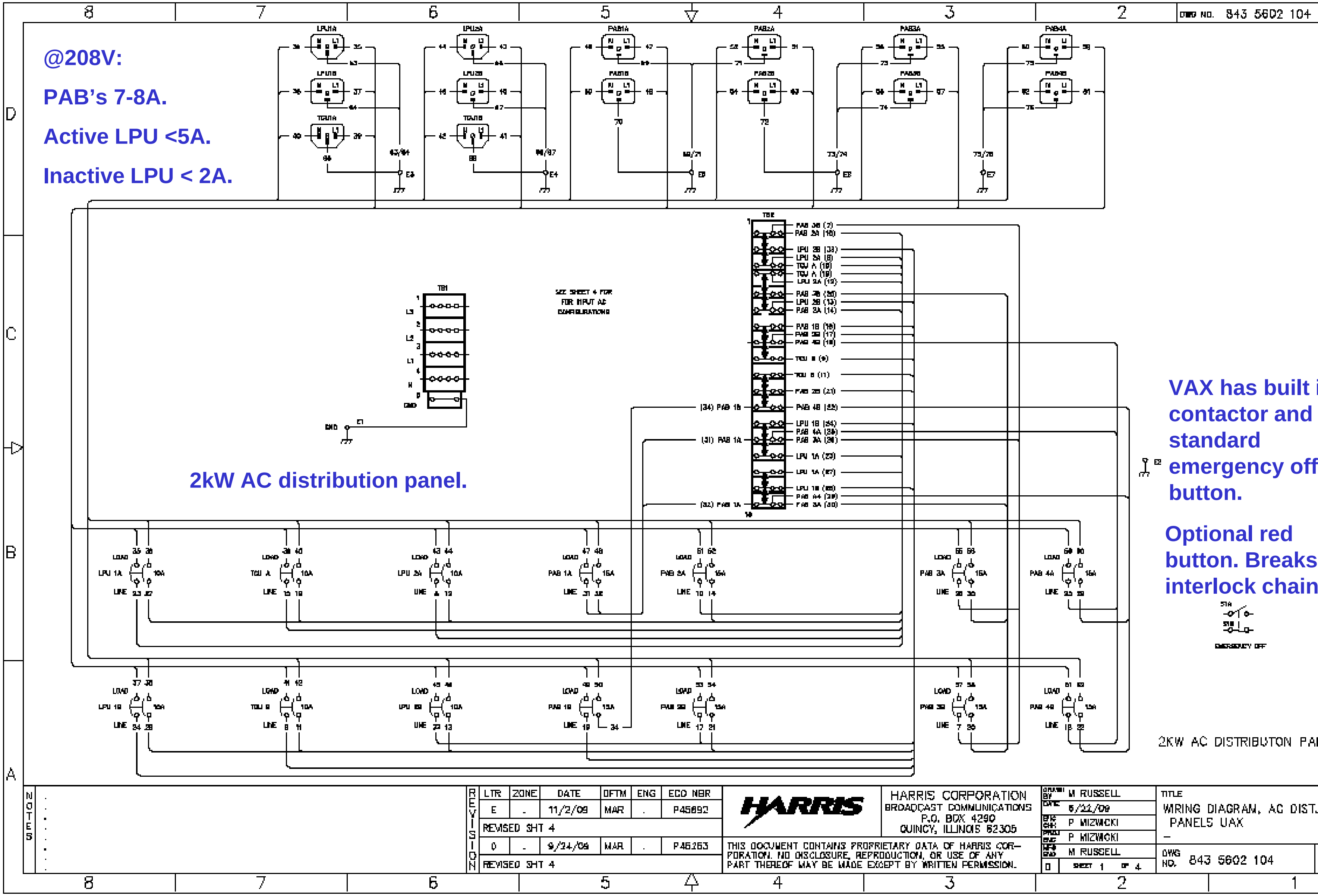
DRAWN BY K MCCABE
DATE 07-09-09
ENG CHK S ROSENBALM
PROJ ENG P MIZVICKI
MFG ENG N RUSSELL
E SHEET 5 OF 5

TITLE OUTLINE DRAWING, UAX TRANSMITTERS

DWG NO. 8435602148 . REV E

AC Distribution, Panel 843-5602-104 (1 of 4)

Section 800



@208V:

PAB's 7-8A.

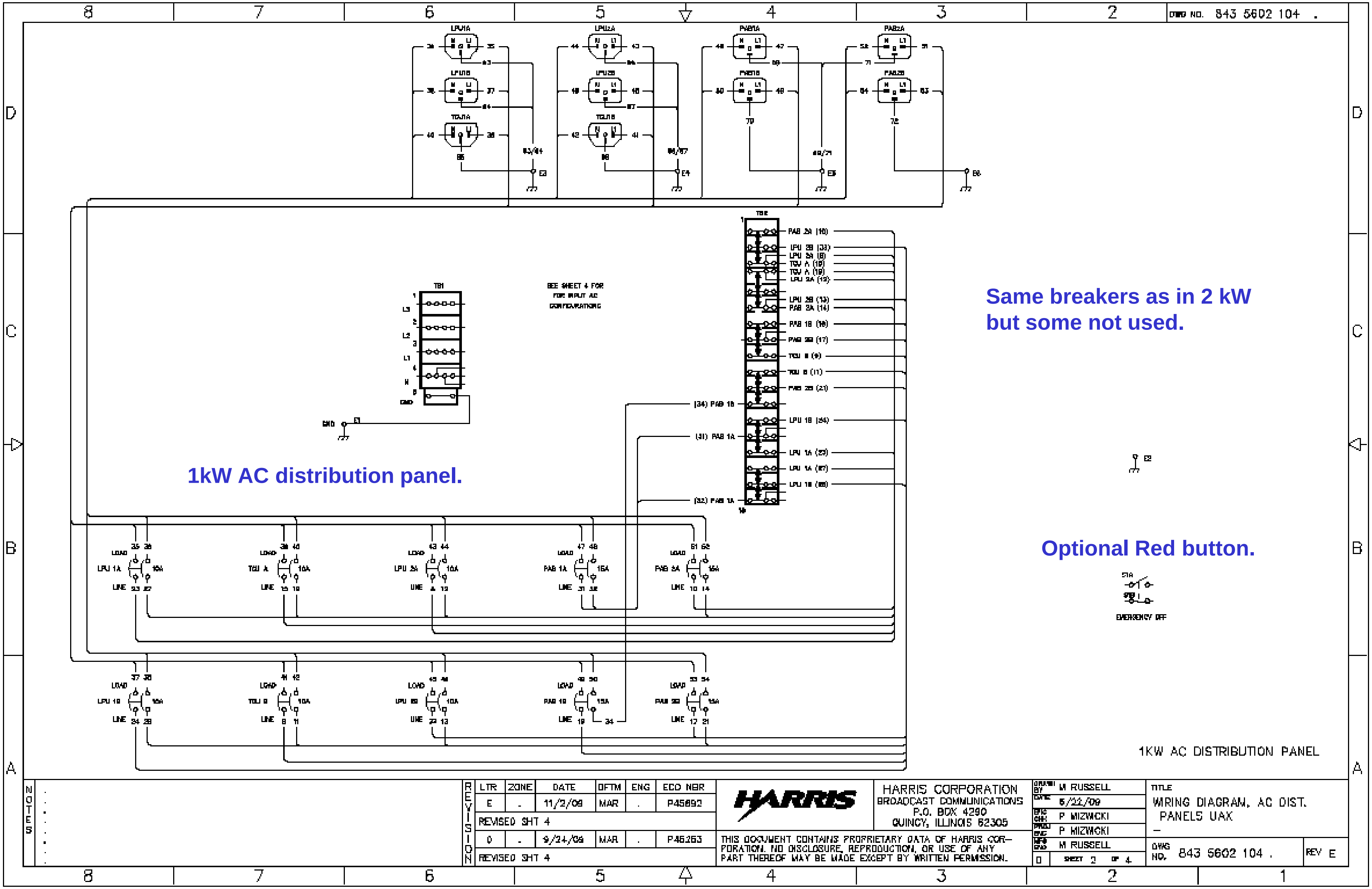
Active LPU <5A.

Inactive LPU < 2A.

2kW AC distribution panel.

VAX has built in contactor and standard emergency off button.

Optional red button. Breaks interlock chain.

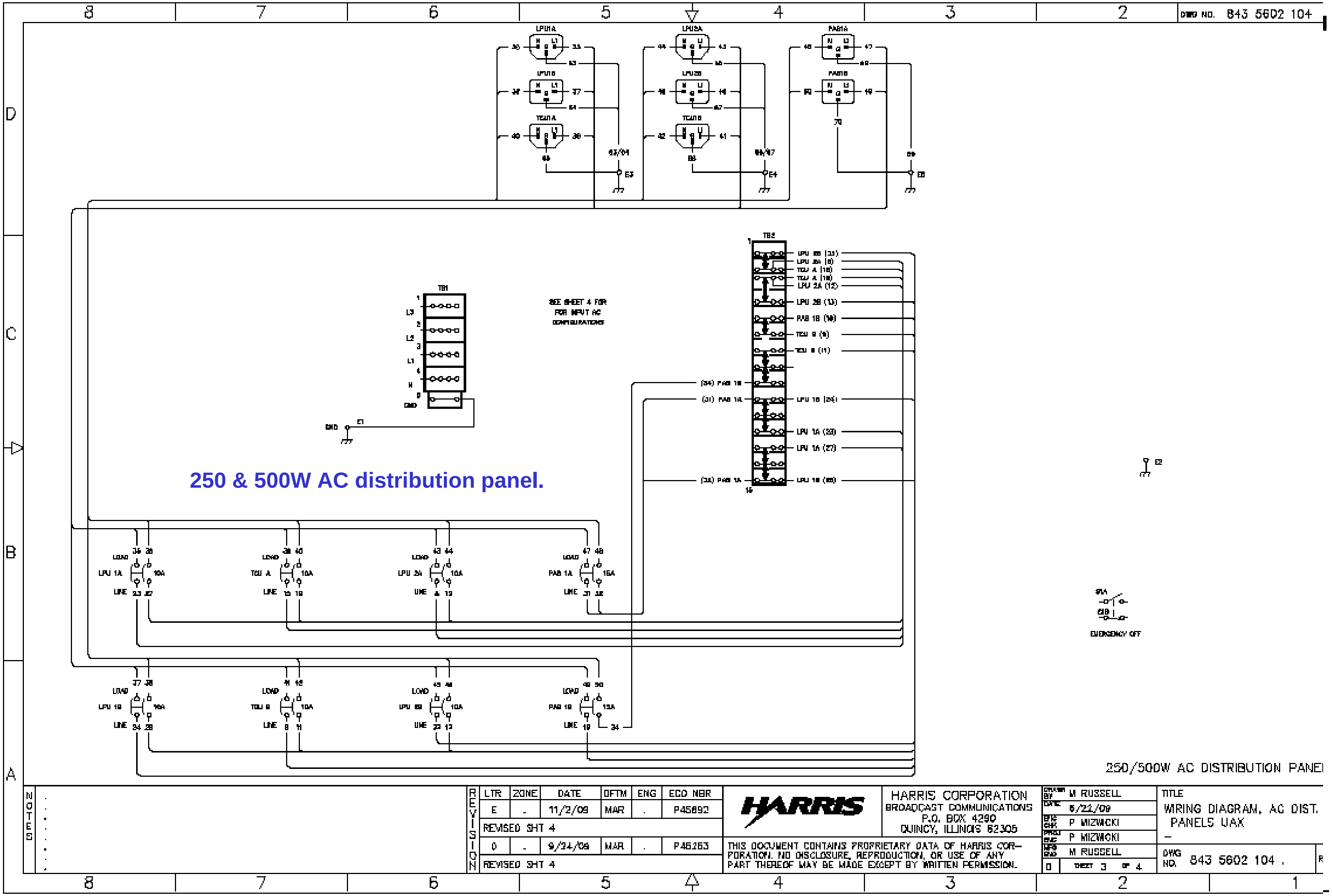


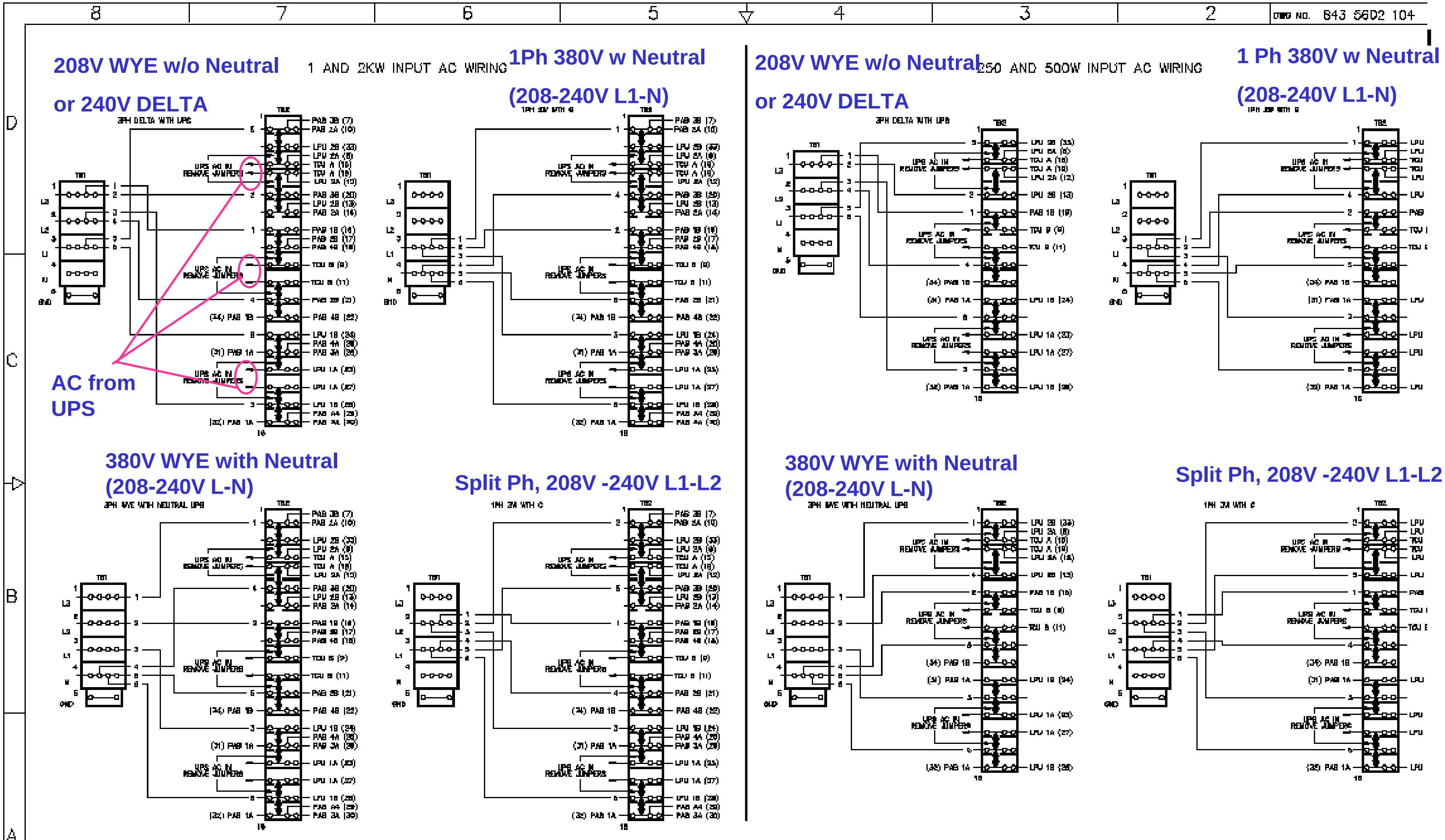
1kW AC distribution panel.

Same breakers as in 2 kW but some not used.

Optional Red button.

HARRIS


DWG NO. 843 5602 104
LPU1A
LPU1B
TCU1A
LPU2A
LPU2B
TCU1B
PA81A
PA81B
TB1
TB2
SEE SHEET 4 FOR FOR INPUT AC CONFIGURATIONS
250 & 500W AC distribution panel.
EMERGENCY OFF
250/500W AC DISTRIBUTION PANEL
LTR ZONE DATE DFTM ENG ECO NBR
E - 11/2/09 MAR . P45692
REVISED SHT 4
0 - 9/24/09 MAR . P45263
REVISED SHT 4
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
P.O. BOX 4290
QUINCY, ILLINOIS 62305
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DRAWN BY M RUSSELL
DATE 6/22/09
P MIZWICKI
P MIZWICKI
M RUSSELL
TITLE
WIRING DIAGRAM, AC DIST. PANELS UAX
DWG NO. 843 5602 104
SHEET 3 OF 4



NOTES

LTR	ZONE	DATE	DFTM	ENG	ECO NBR
E	-	11/2/09	MAR	-	P45892
REVISED 3PH WYE ON 1&2 KW					
D	-	9/24/09	MAR	-	P45263
REVISED SHT 4					

HARRIS

HARRIS CORPORATION
BROADCAST COMMUNICATIONS
P.O. BOX 4290
QUINCY, ILLINOIS 62305

DRAWN BY M RUSSELL
DATE 6/22/09
ENG CHK P MIAWICKI
PROJ ENG P MIZWICKI
MFG ENG M RUSSELL

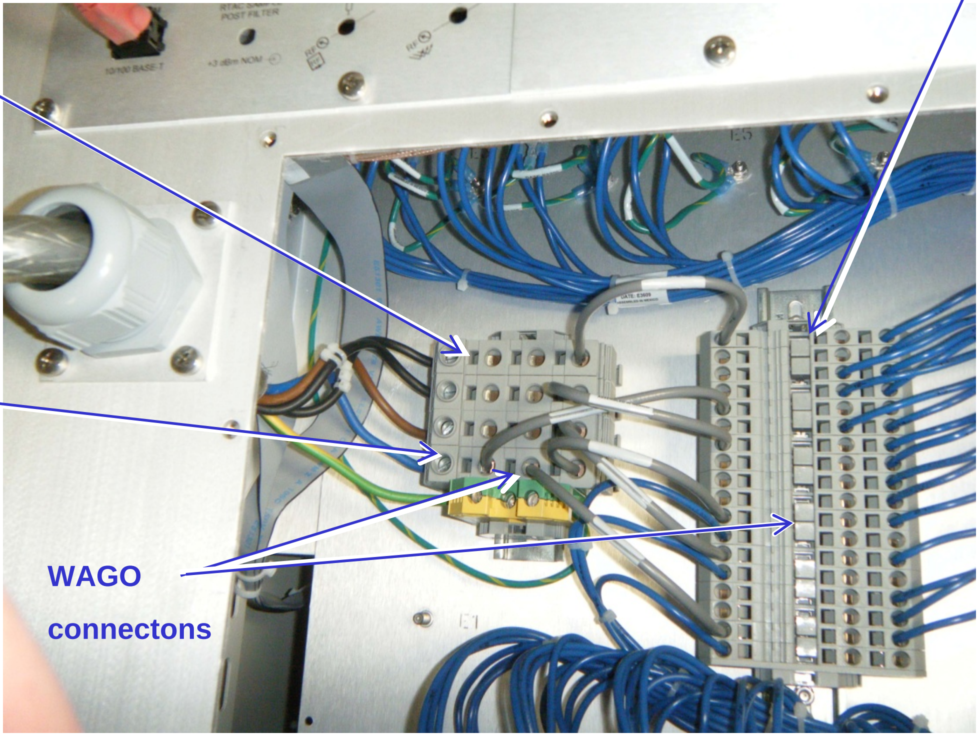
TITLE WIRING DIAGRAM, AC DIST PANELS UAX

C SHEET 4 OF 4

DWG NO. 843 5602 104

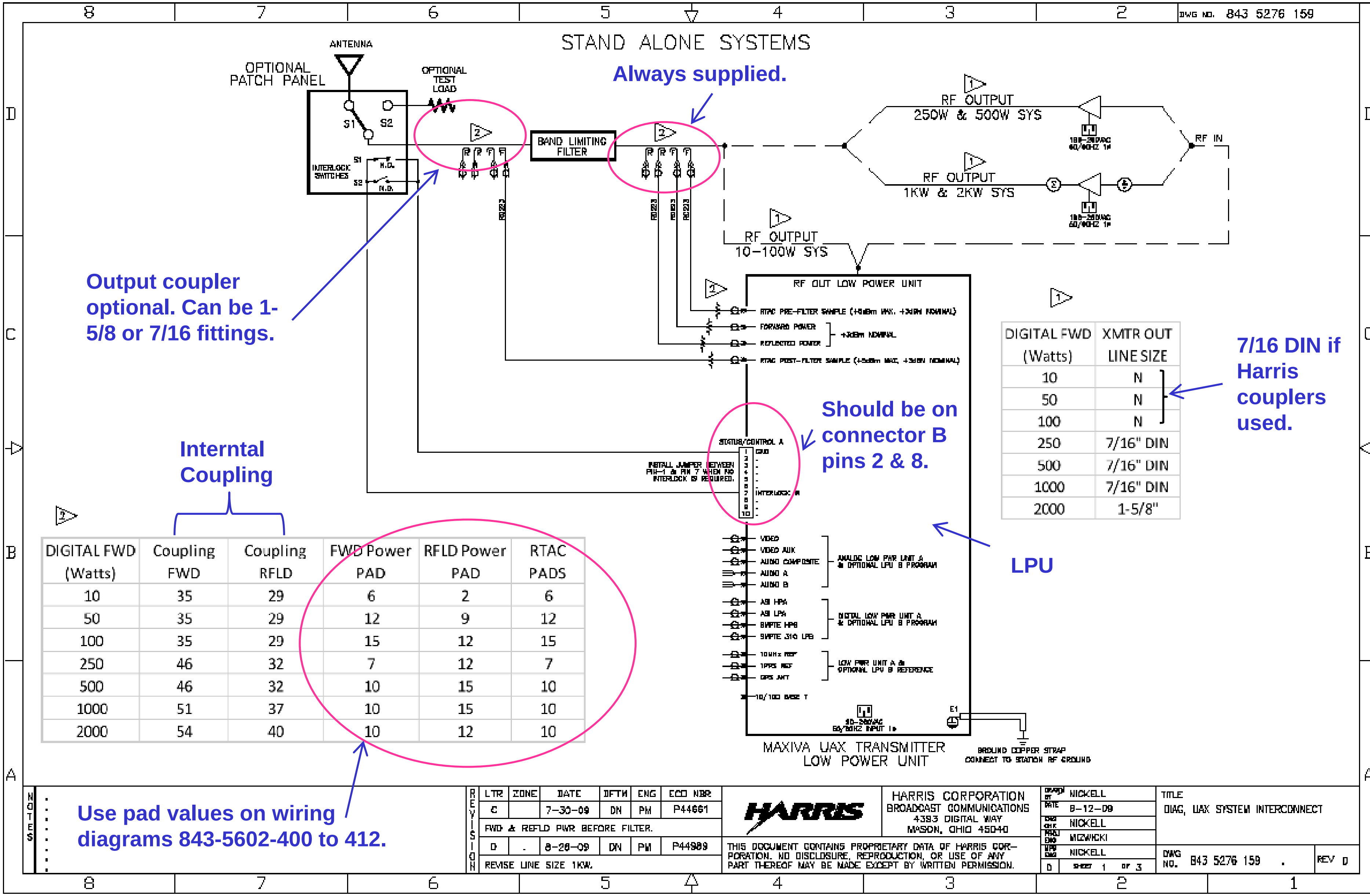
AC Connection (top of cabinet)

Access panel removed.



480V not acceptable. Must be < 240V line to line.

HARRIS

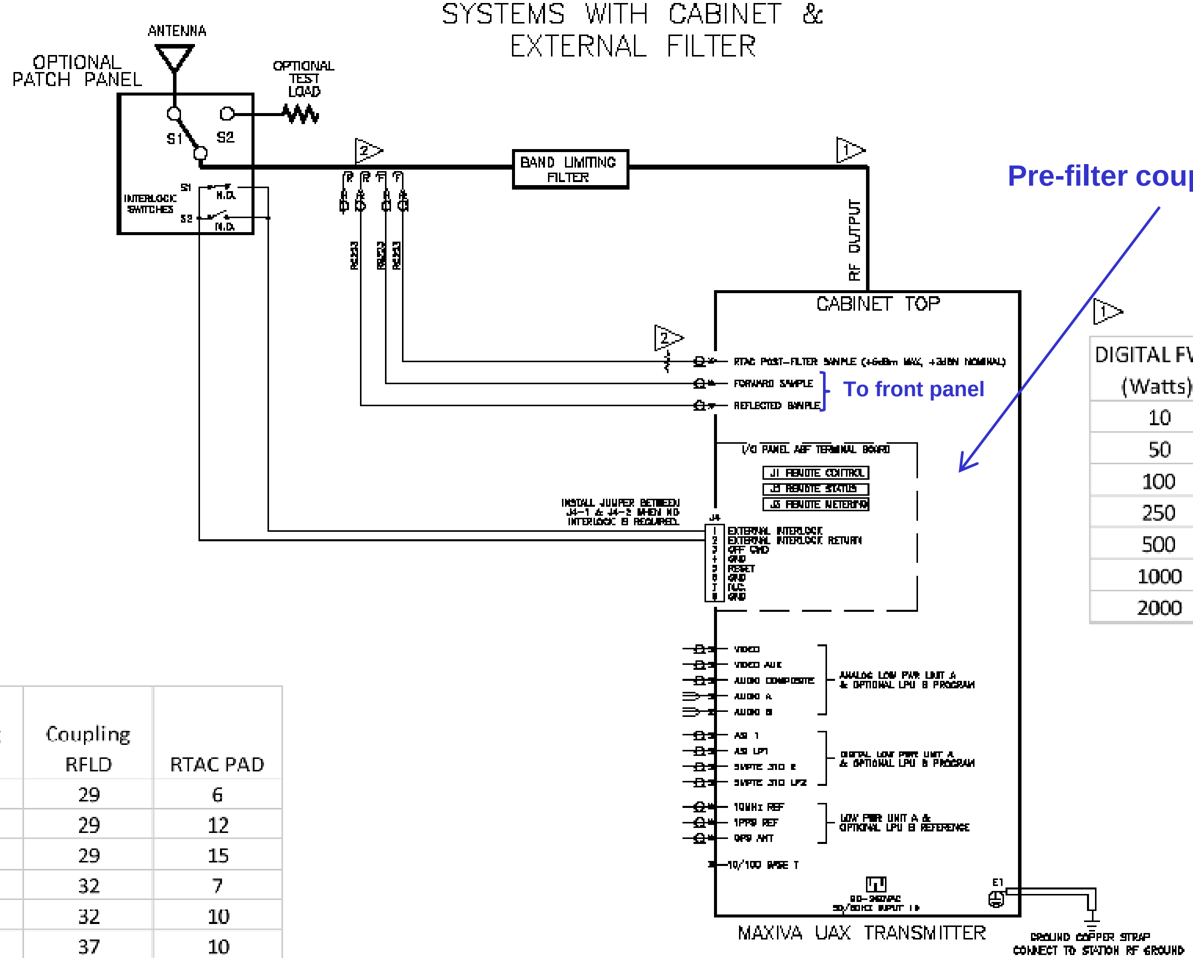


DIGITAL FWD (Watts)	Coupling FWD	Coupling RFLD	FWD Power PAD	RFLD Power PAD	RTAC PADS
10	35	29	6	2	6
50	35	29	12	9	12
100	35	29	15	12	15
250	46	32	7	12	7
500	46	32	10	15	10
1000	51	37	10	15	10
2000	54	40	10	12	10

DIGITAL FWD (Watts)	XMTR OUT LINE SIZE
10	N
50	N
100	N
250	7/16" DIN
500	7/16" DIN
1000	7/16" DIN
2000	1-5/8"

HARRIS

SYSTEMS WITH CABINET & EXTERNAL FILTER



DIGITAL FWD (Watts)	XMTR OUT LINE SIZE
10	N
50	N
100	N
250	7/16" DIN
500	7/16" DIN
1000	7/16" DIN
2000	1-5/8"

DIGITAL FWD (Watts)	Coupling FWD	Coupling RFLD	RTAC PAD
10	35	29	6
50	35	29	12
100	35	29	15
250	46	32	7
500	46	32	10
1000	51	37	10
2000	54	40	10

LTR	ZONE	DATE	DFTM	ENG	ECO NBR
C		7-30-09	DN	PM	P44661
FWD & REFLD PWR BEFORE FILTER.					
D	.	8-26-09	DN	PM	P44989
REVISE LINE SIZE 1KW.					

HARRIS CORPORATION
BROADCAST COMMUNICATIONS
4393 DIGITAL WAY
MASON, OHIO 45040

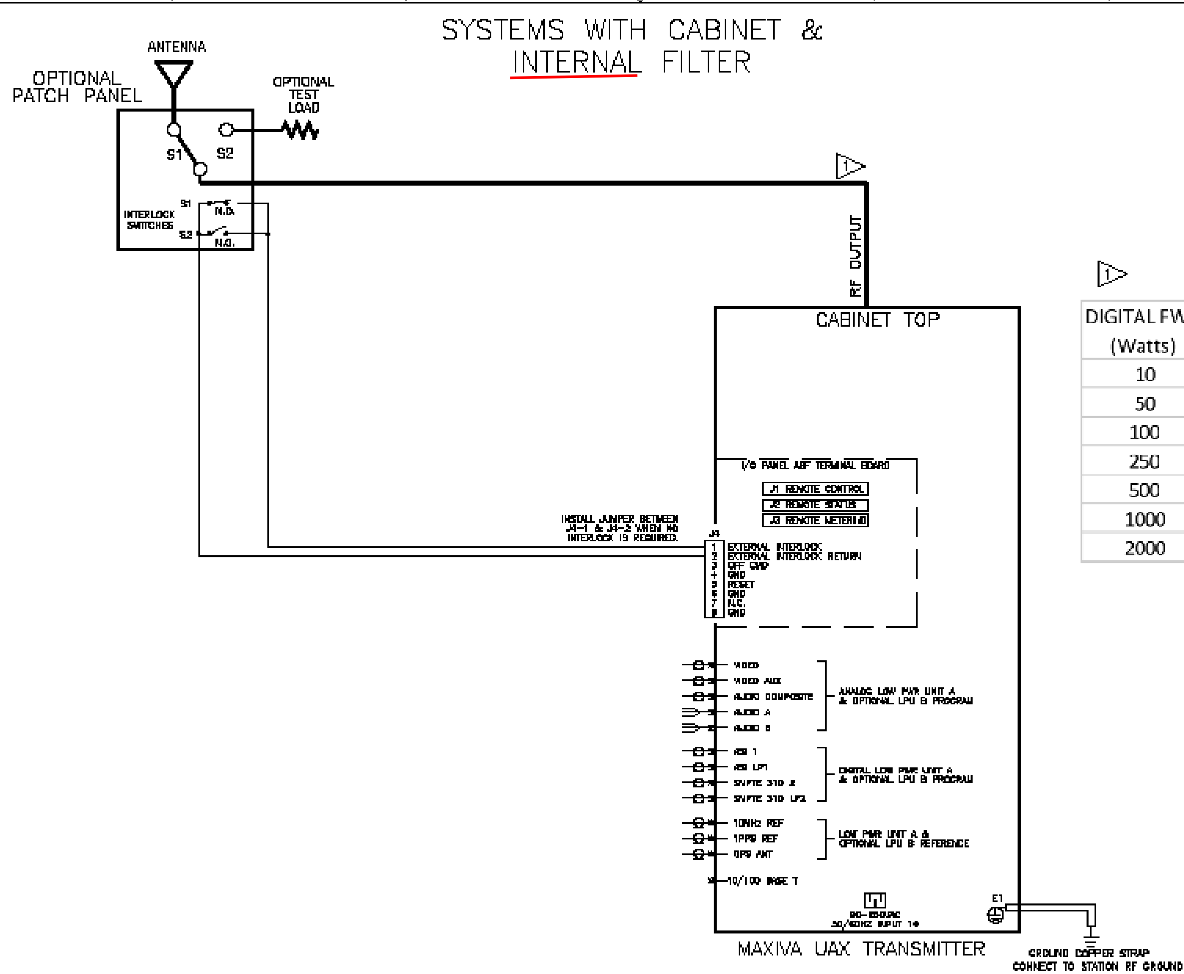
DRAWN BY NICKELL · DATE 8-12-09 · CHK NICKELL · PROJ ENG MIZWICKI · MFG ENG NICKELL

TITLE: DIAG, UAX SYSTEM INTERCONNECT

DWG NO. 843 5276 159 · D · SHEET 2 OF 3

HARRIS

SYSTEMS WITH CABINET & INTERNAL FILTER



1

DIGITAL FWD (Watts)	XMTR OUT LINE SIZE
10	N
50	N
100	N
250	7/16" DIN
500	7/16" DIN
1000	7/16" DIN
2000	1-5/8"

NOTES:

LTR	ZONE	DATE	DFTM	ENG	ECO NBR
C		7-30-09	DN	PM	P44661
FWD & REFLD PWR BEFORE FILTER.					
D	.	8-26-09	DN	PM	P44989
REVISE LINE SIZE 1KW.					

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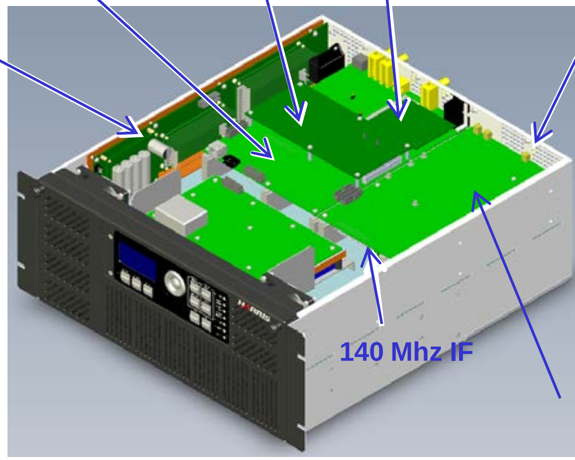
DRAWN BY: NICKELL
DATE: 6-12-09
CHK: NICKELL
PROJ ENG: MIZWICKI
MFG ENG: NICKELL

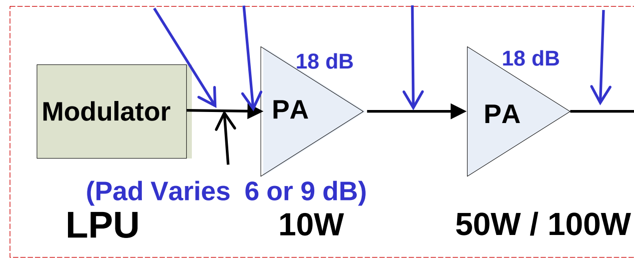
TITLE: DIAG, UAX SYSTEM INTERCONNECT

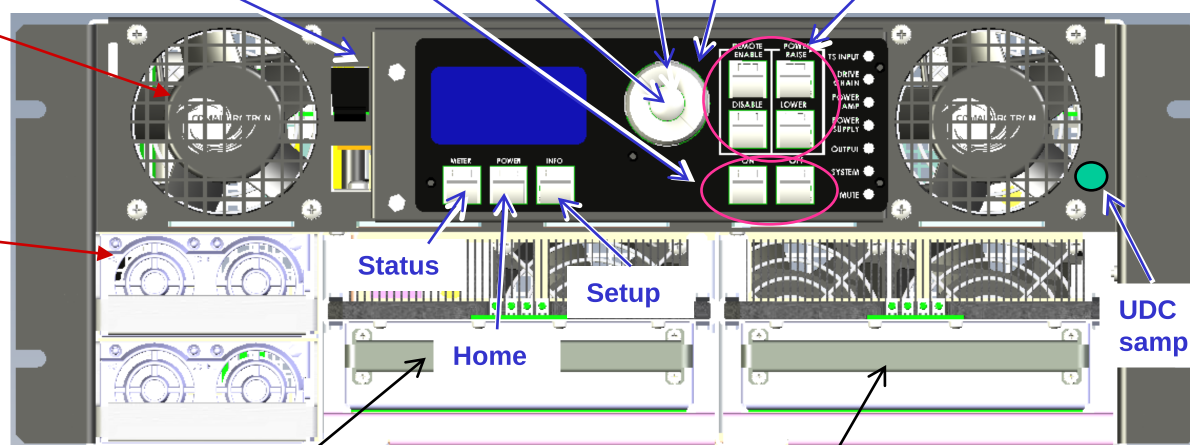
DWG NO. 843 5276 159 — REV D — SHEET 3 OF 3

10-100W Transmitter Block Diagram

4RU Chassis







10-100W Transmitter - LPU



Front View (Cover Opened)

HARRIS

LPU 10-100W Transmitter

PS2

PS1



LPU Front

UDC Out 75 mW (digital)
150 mW (analog)

RTAC Samples -5 dBm
nominal, -10 to -2 range

CAN

RS232

ASI monitor out

ASI (ATSC)

SMPTE (ATSC)

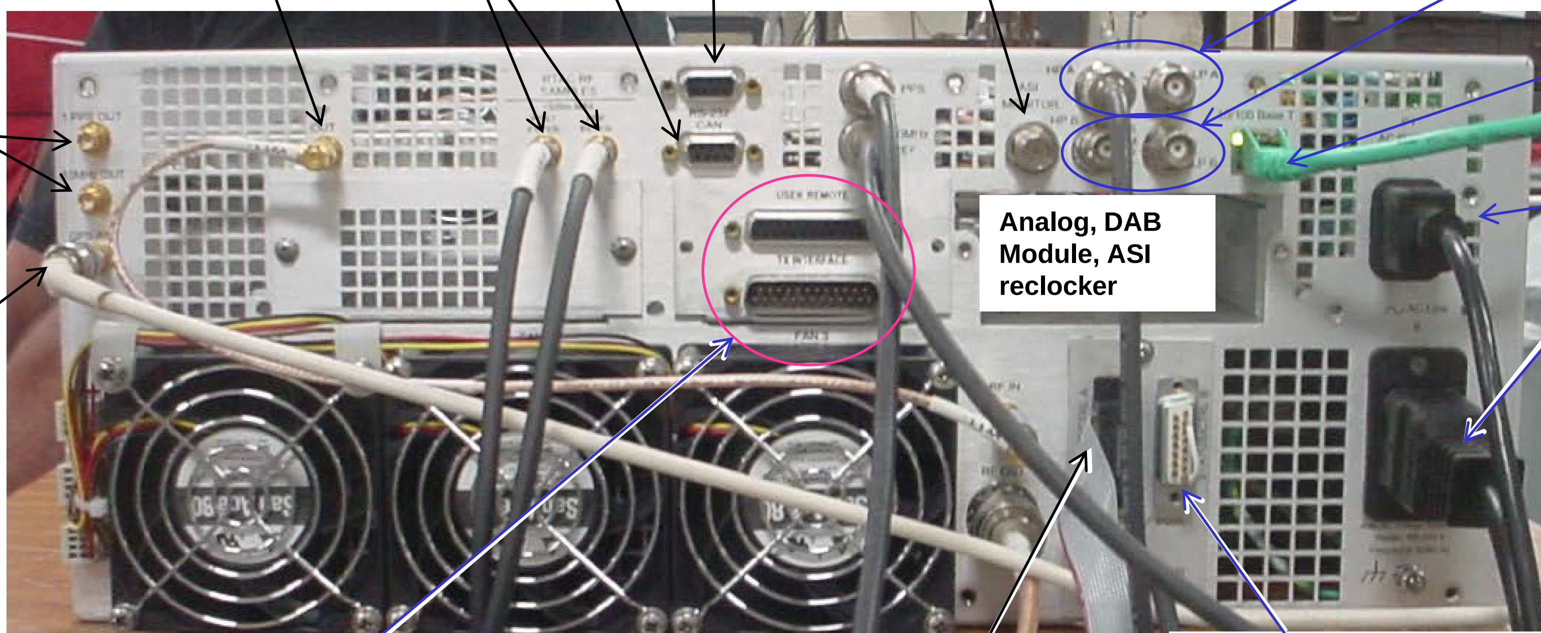
Ethernet

Ref. Out
1pps &
10 MHz

Mod.
AC

Amp.
AC

GPS In



LPU Rear

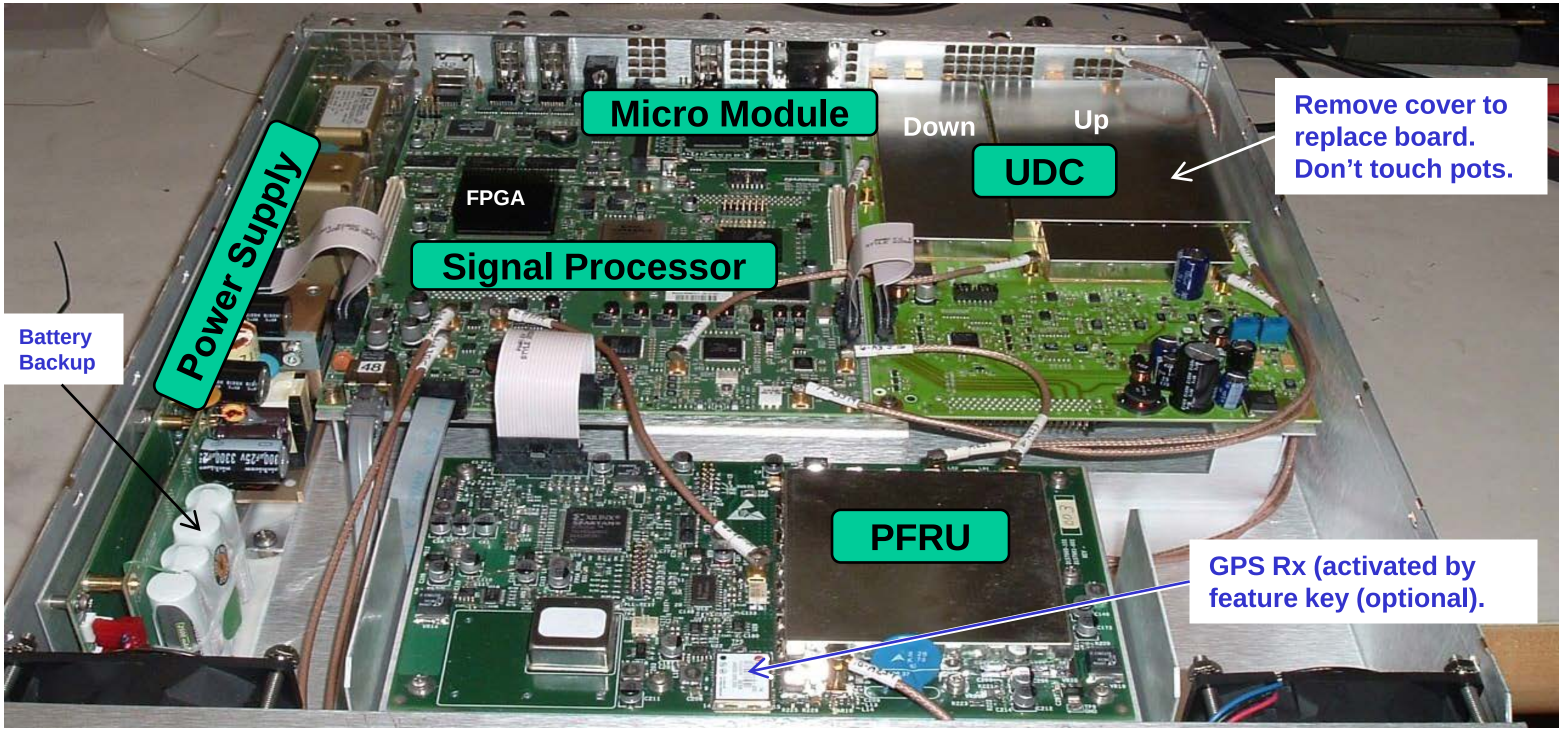
Used for remote control in standalone system. TCU control in dual system. Remove cable and LPU takes over.

Ribbon cable removal doesn't affect other LPU

Safety Interlock pins 2 & 8. On command reactivates. Kills RF and DC too.

Controller/Modulator Side of LPU 10W-100W TX

- Micro Module serves as controller for UAX system
- In stand alone systems the controller will gather information for customer display
- Supports any modulation standard – software controls modulation type



LPU Front (top cover removed)

Optional Battery Backup

The battery backup keeps the GPS receiver, 10 MHz OCXO and associated PFRU circuitry alive for approximately 15 minutes* during a power failure. Currently under development is a replacement that will keep the UDC operating for 15 minutes and the PFRU and GPS alive disciplined for 45 minutes.

This is to ensure that when power is restored, the operator does not have to wait for a GPS re-acquisition or the oscillator to warm back up and re-stabilize. Saves time on restart.

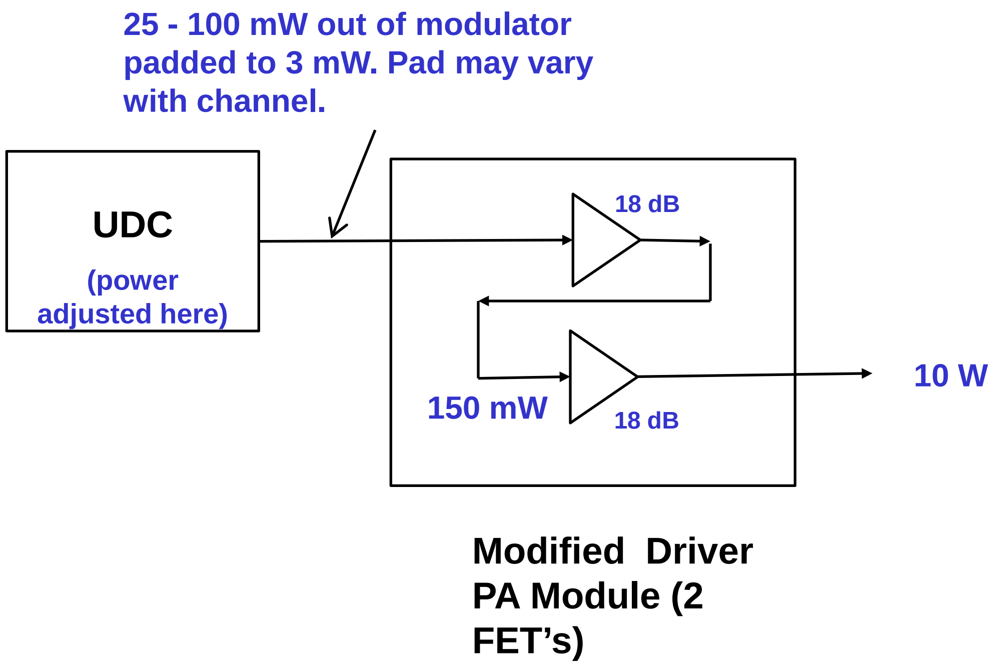
Operation of this circuitry and battery backup option are recommended for SFN installations.

*When batteries are new and fresh. These batteries should be considered a routine maintenance item and replaced at appropriate intervals.

Replacement every year is recommended.

10W Transmitter Model

HARRIS

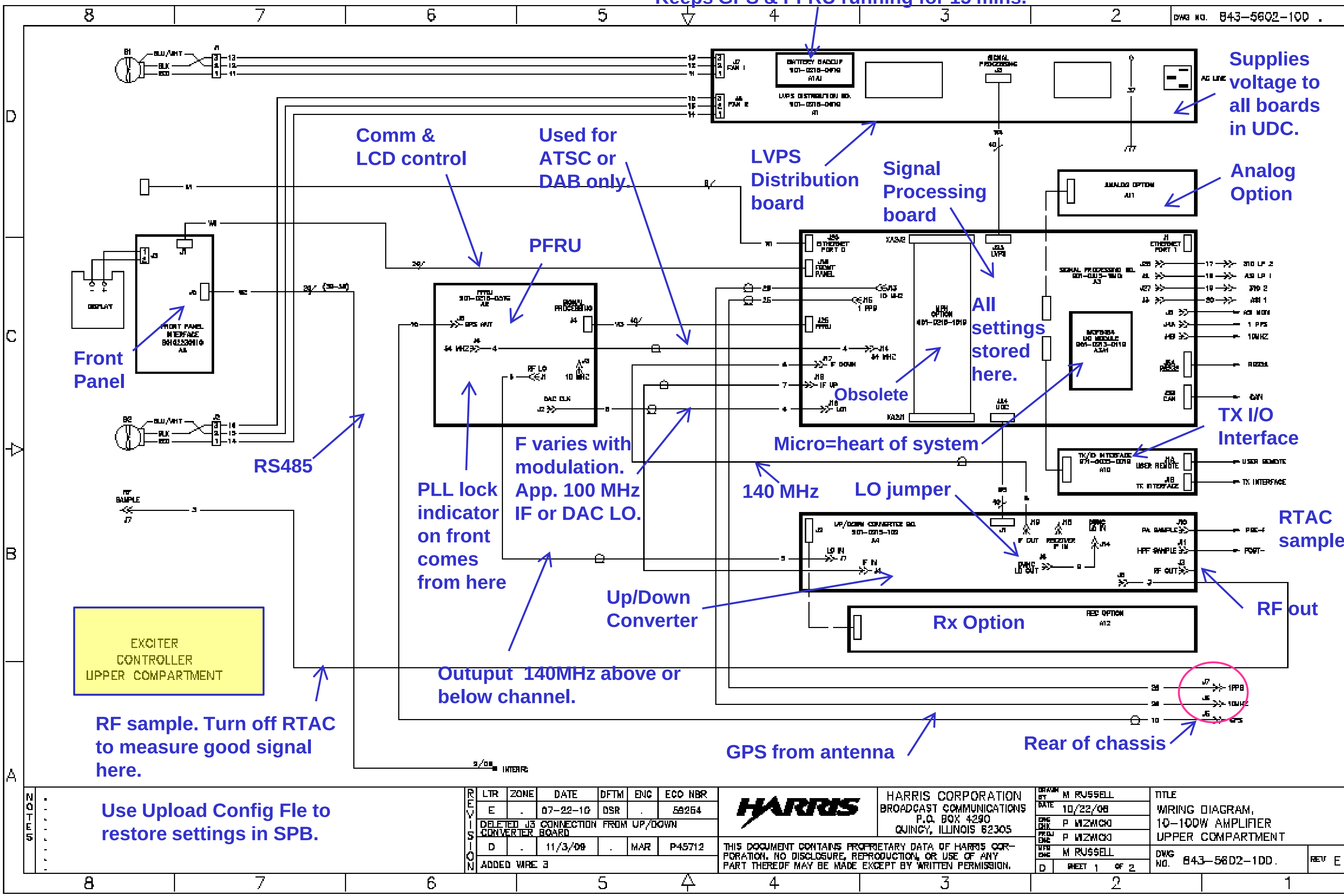


Special driver module (cascade) used for 10W LPU.
Standard module used for 50 & 100 W LPU.

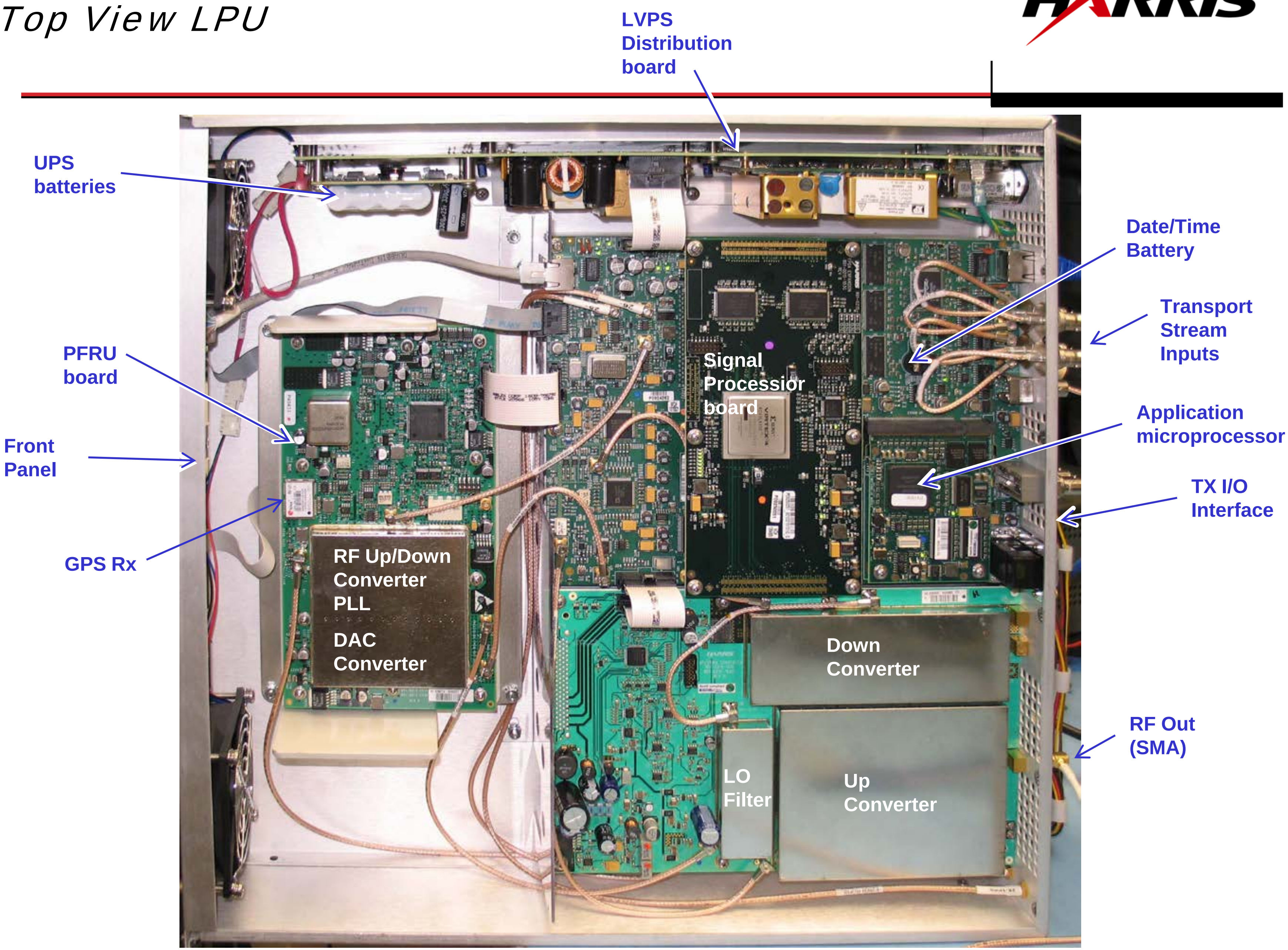
Second PA Module added for 50 & 100W LPU's
Power and gain levels given are estimates only.

Wiring Diagram 10-100 W 843-5602-100 (1 of 2)

Section 100



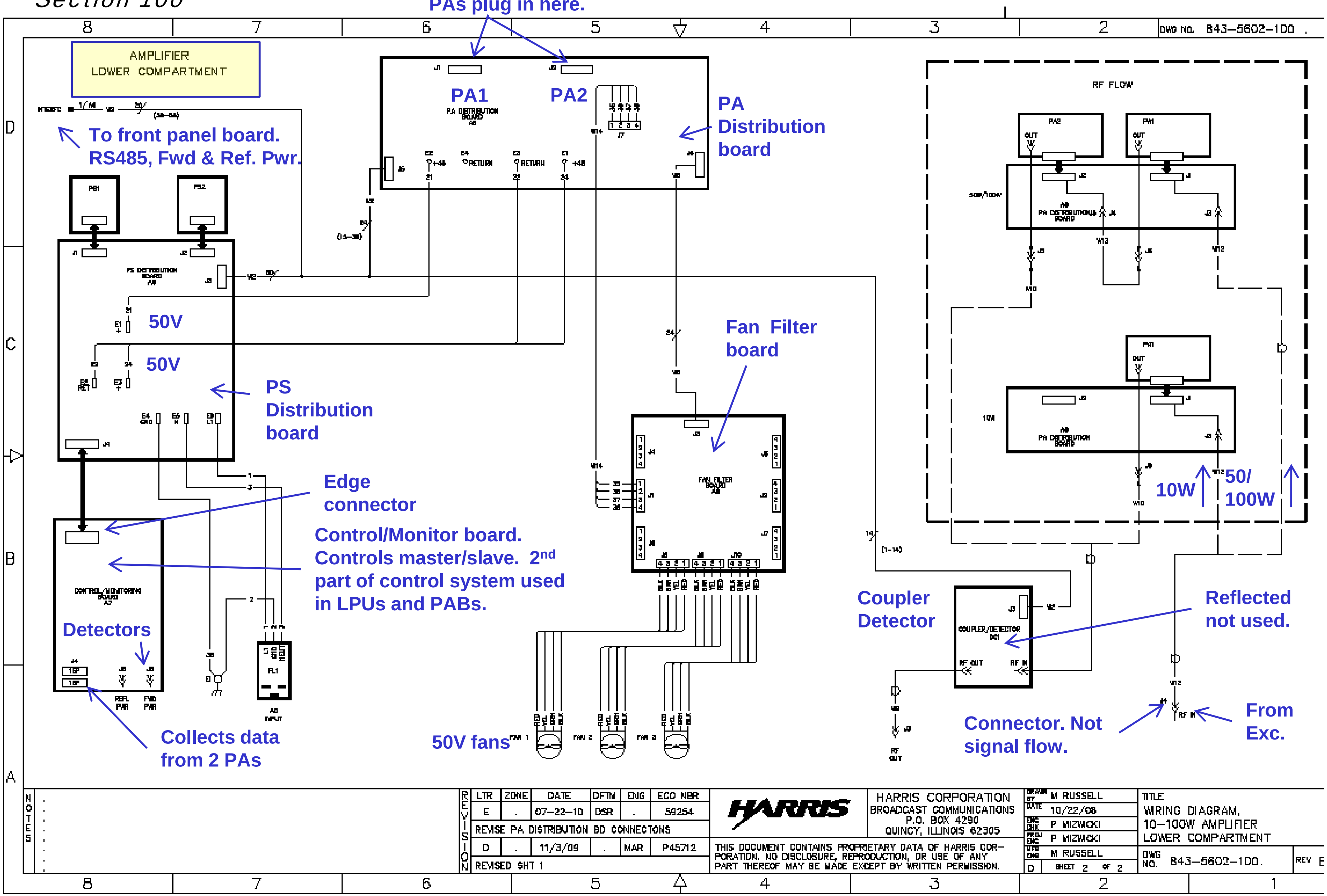
Top View LPU

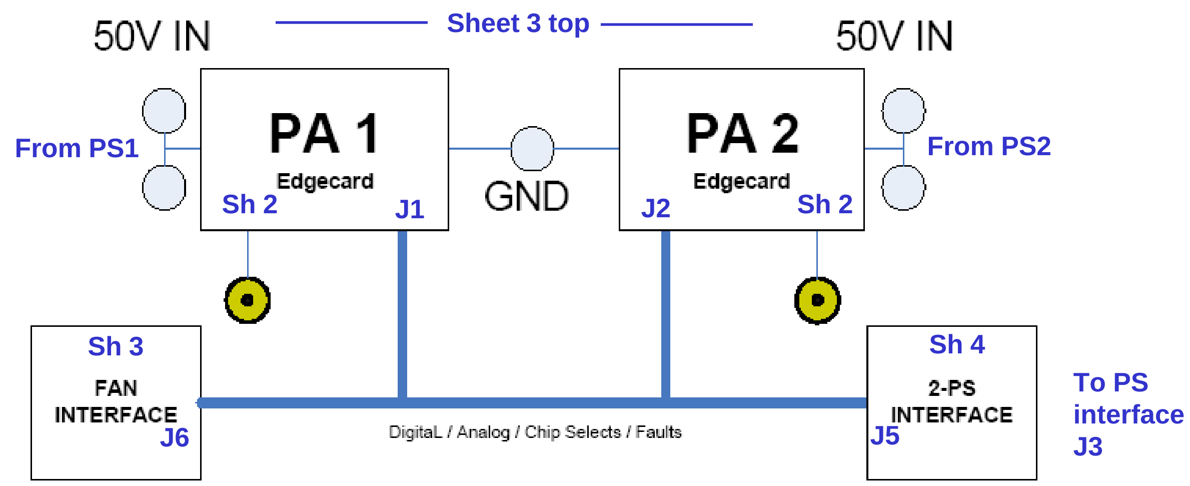


LVPS Distribution board
UPS batteries
Date/Time Battery
Transport Stream Inputs
PFRU board
Signal Processor board
Application microprocessor
Front Panel
TX I/O Interface
GPS Rx
RF Up/Down Converter PLL
DAC Converter
Down Converter
RF Out (SMA)
LO Filter
Up Converter

Wiring Diagram 10-100 W 843-5602-100 (2 of 2)

Section 100





Trigger off this to see.

Signals multiplexed back to controller.

Used in PA Blocks

SIGNAL	DIRECTION	POWER AMP 1 /INT_CS_0 (100 & 500)	POWER AMP 2 /INT_CS_1 (100 & 500)	POWER AMP 3 /INT_CS_2 (500W)	POWER AMP 4 /INT_CS_3 (500W)	DETECTOR/COUPLER /INT_CS_4 (100W)	FAN INTERFACE 1 /INT_CS_5 (100 & 500)	FAN INTERFA /INT_CS_6 (UN
INT_DIGITAL_0	IN	FAULT 1	FAULT 1	FAULT 1	FAULT 1	X	FAN 1 FAULT	X
INT_DIGITAL_1	IN	FAULT 2	FAULT 2	FAULT 2	FAULT 2	X	FAN 2 FAULT	X
INT_DIGITAL_2	IN	FAULT 3	FAULT 3	FAULT 3	FAULT 3	X	FAN 3 FAULT	X
INT_DIGITAL_3	IN	POWER SUPPLY FLT	POWER SUPPLY FLT	POWER SUPPLY FLT	POWER SUPPLY FLT	X	FAN 4 FAULT	X
INT_ANALOG_0	IN	PA TEMPERATURE	PA TEMPERATURE	PA TEMPERATURE	PA TEMPERATURE	REFLECTED RMS	X	X
INT_ANALOG_1	IN	FET A2 CURRENT	FET A2 CURRENT	FET A2 CURRENT	FET A2 CURRENT	FORWARD RMS	X	X
INT_ANALOG_2	IN	FET A1 CURRENT	FET A1 CURRENT	FET A1 CURRENT	FET A1 CURRENT	FORWARD PEAK	X	X
INT_ANALOG_3	IN	PS 50V SAMPLE	PS 50V SAMPLE	PS 50V SAMPLE	PS 50V SAMPLE	X	X	X
INT_LED_1	OUT	X	X	X	X	X	X	X
INT_LED_2	OUT	X	X	X	X	X	X	X
INT_LED_3	OUT	X	X	X	X	X	X	X

Not used.

NOTES
4. INDUCTANCE IN UH.
3. CAPACITANCE IN UF.
2. RESISTANCE IN OHMS.
1. ALL RESISTORS ARE 1/10 WATT, 5%.
UNLESS OTHERWISE NOTED:
5. SHEET NUMBER / ZONE / CONTINUATION SYMBOL

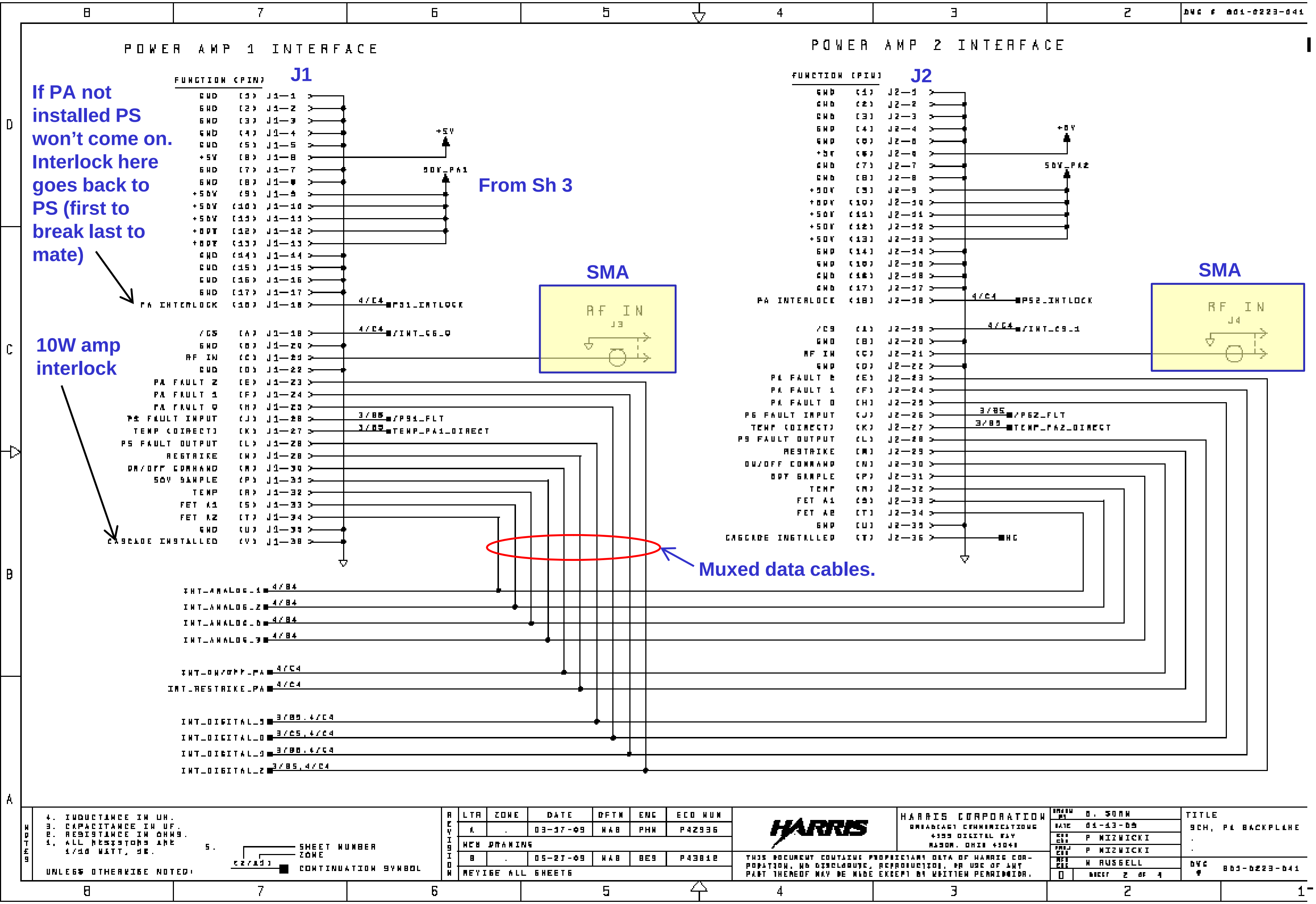
LTR	ZONE	DATE	DFTM	ENG	ECO NUM
A	.	03-17-09	WAB	PHH	P42936
NEW DRAWING					
B	.	05-27-09	WAB	BES	P43812
REVISE ALL SHEETS					

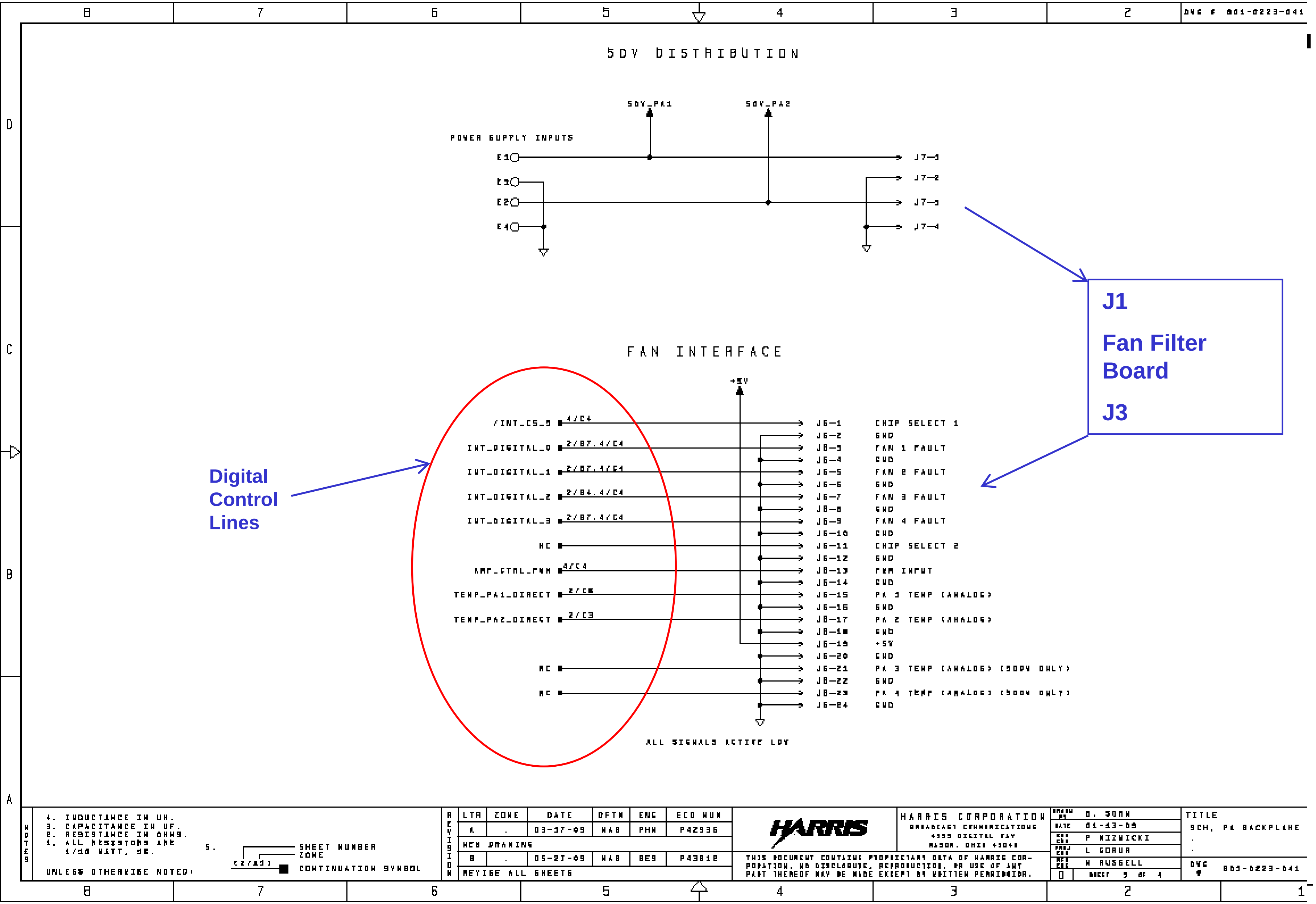
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
4393 DIGITAL WAY
MASON, OHIO 45040

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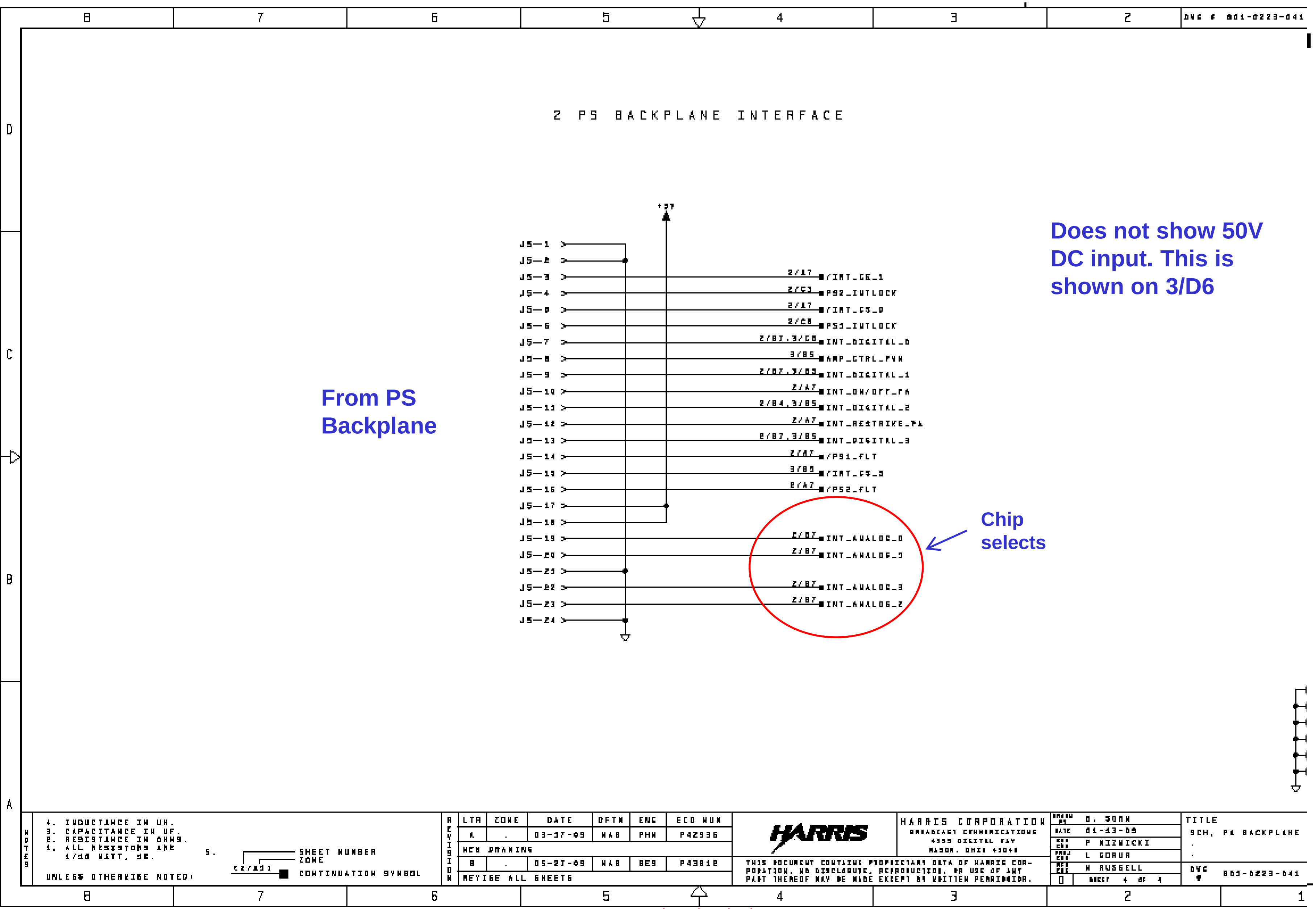
DRAWN BY: B. SONN
DATE: 01-13-09
P WIZNICKI
L GORUR
W RUSSELL
SHEET 1 OF 4

TITLE
SCH, PA BACKPLANE
DWG # 801-0223-041


POWER AMP 1 INTERFACE
J1
POWER AMP 2 INTERFACE
J2
If PA not installed PS won't come on. Interlock here goes back to PS (first to break last to mate)
From Sh 3
SMA
RF IN
J3
SMA
RF IN
J4
10W amp interlock
Muxed data cables.
HARRIS CORPORATION
TITLE
SCH, PA BACKPLANE

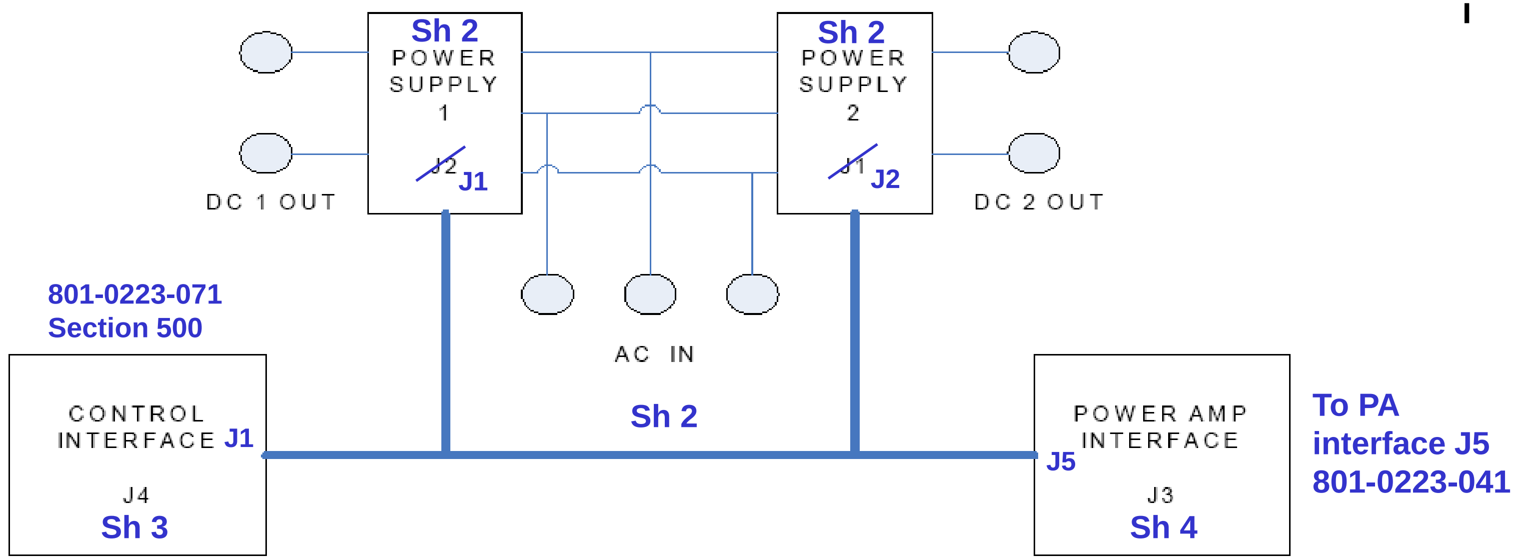

50V DISTRIBUTION
POWER SUPPLY INPUTS
FAN INTERFACE
J1
Fan Filter Board
J3
Digital Control Lines
CHIP SELECT 1
GND
FAN 1 FAULT
FAN 2 FAULT
FAN 3 FAULT
FAN 4 FAULT
CHIP SELECT 2
+5V
ALL SIGNALS ACTIVE LOW
HARRIS CORPORATION
TITLE
SCH, PA BACKPLANE

HARRIS


2 PS BACKPLANE INTERFACE
+5V
J5-1
J5-2
J5-3
J5-4
J5-5
J5-6
J5-7
J5-8
J5-9
J5-10
J5-11
J5-12
J5-13
J5-14
J5-15
J5-16
J5-17
J5-18
J5-19
J5-20
J5-21
J5-22
J5-23
J5-24
/INT_CS_1
PS2_INTLOCK
/INT_CS_0
PS1_INTLOCK
INT_DIGITAL_0
AMP_CTRL_PWM
INT_DIGITAL_1
INT_ON/OFF_PA
INT_DIGITAL_2
INT_RESTRIKE_PA
INT_DIGITAL_3
/PS1_FLT
/INT_CS_3
/PS2_FLT
INT_ANALOG_0
INT_ANALOG_1
INT_ANALOG_3
INT_ANALOG_2
Does not show 50V DC input. This is shown on 3/D6
From PS Backplane
Chip selects
HARRIS CORPORATION
TITLE
SCH, PA BACKPLANE
801-0223-041

PS Backplane10-100 W 801-0223-051 (1 of 4)

Section 100



Same table as shown in PA backplane drawing.

SIGNAL	DIRECTION	POWER AMP 1 /INT_CS_0 (100 & 500)	POWER AMP 2 /INT_CS_1 (100 & 500)	POWER AMP 3 /INT_CS_2 (500W)	POWER AMP 4 /INT_CS_3 (500W)	DETECTOR/COUPLER /INT_CS_4 (100W)	FAN INTERFACE 1 /INT_CS_5 (100 & 500)	FAN INTERFACE /INT_CS_6 (UNUSE
INT_DIGITAL_0	IN	FAULT 1	FAULT 1	FAULT 1	FAULT 1	X	FAN 1 FAULT	X
INT_DIGITAL_1	IN	FAULT 2	FAULT 2	FAULT 2	FAULT 2	X	FAN 2 FAULT	X
INT_DIGITAL_2	IN	FAULT 3	FAULT 3	FAULT 3	FAULT 3	X	FAN 3 FAULT	X
INT_DIGITAL_3	IN	POWER SUPPLY FLT	POWER SUPPLY FLT	POWER SUPPLY FLT	POWER SUPPLY FLT	X	FAN 4 FAULT	X
INT_ANALOG_0	IN	PA TEMPERATURE	PA TEMPERATURE	PA TEMPERATURE	PA TEMPERATURE	REFLECTED RMS	X	X
INT_ANALOG_1	IN	FET A2 CURRENT	FET A2 CURRENT	FET A2 CURRENT	FET A2 CURRENT	FORWARD RMS	X	X
INT_ANALOG_2	IN	FET A1 CURRENT	FET A1 CURRENT	FET A1 CURRENT	FET A1 CURRENT	FORWARD PEAK	X	X
INT_ANALOG_3	IN	PS 50V SAMPLE	PS 50V SAMPLE	PS 50V SAMPLE	PS 50V SAMPLE	X	X	X
INT_LED_1	OUT	X	X	X	X	X	X	X
INT_LED_2	OUT	X	X	X	X	X	X	X
INT_LED_3	OUT	X	X	X	X	X	X	X

NOTES: UNLESS OTHERWISE NOTED:
1. ALL RESISTORS ARE 1/10 WATT, 5%.
2. RESISTANCE IN OHMS.
3. CAPACITANCE IN UF.
4. INDUCTANCE IN UH.
5. SHEET NUMBER / ZONE / CONTINUATION SYMBOL

LTR	ZONE	DATE	DFTN	ENG	ECO NUM
A	.	03-25-09	WAB	PHN	P43085
NEW DRAWING					
B	.	05-27-09	WAB	BES	P43811
REVISE ALL SHEETS					

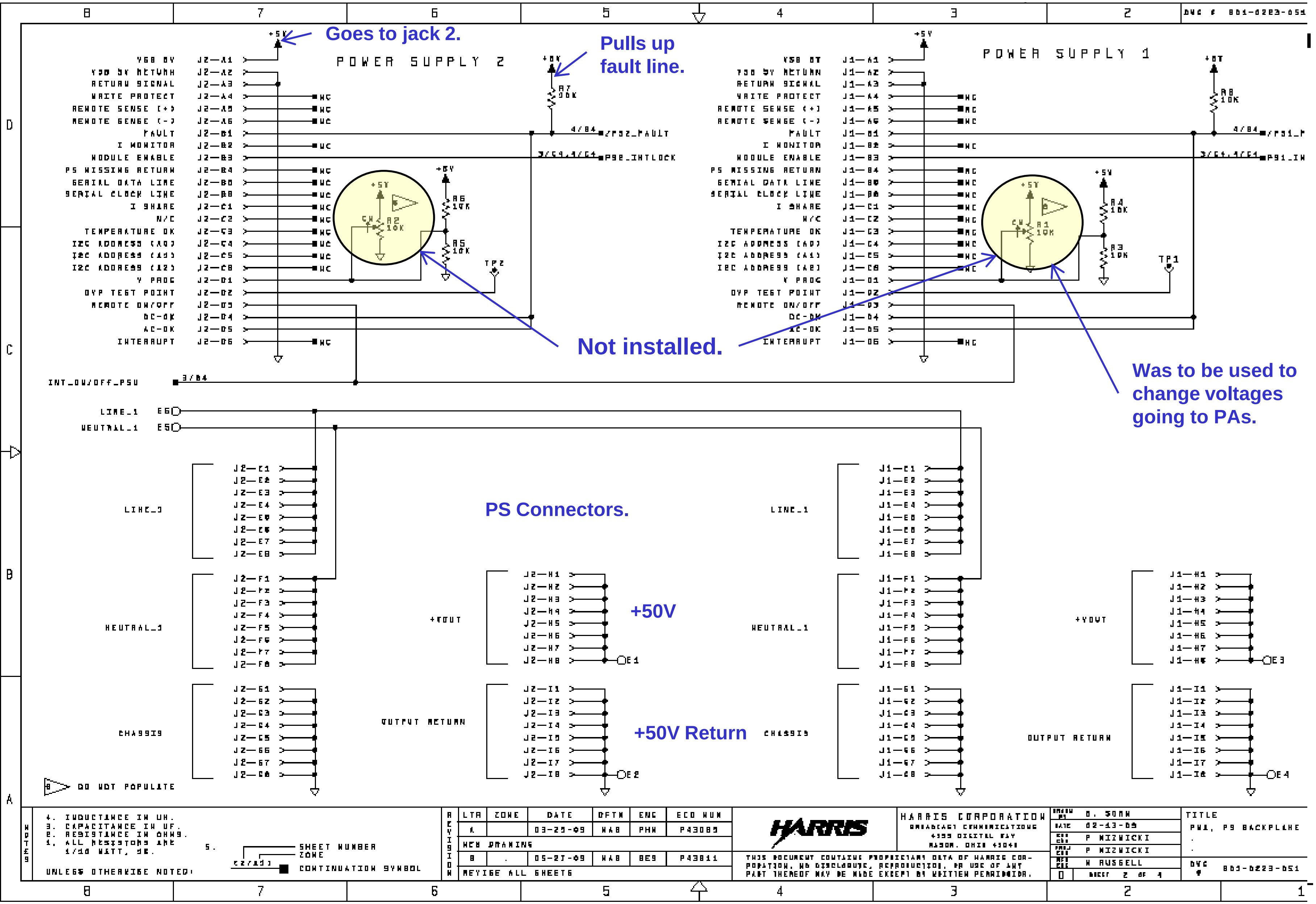
HARRIS CORPORATION BROADCAST COMMUNICATIONS 4393 DIGITAL WAY MASON, OHIO 45040

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DRAWN BY D. SOHN; DATE 02-13-09; P MIZWICKI; P MIZWICKI; W RUSSELL; SIZE D; SHEET 1 OF 4

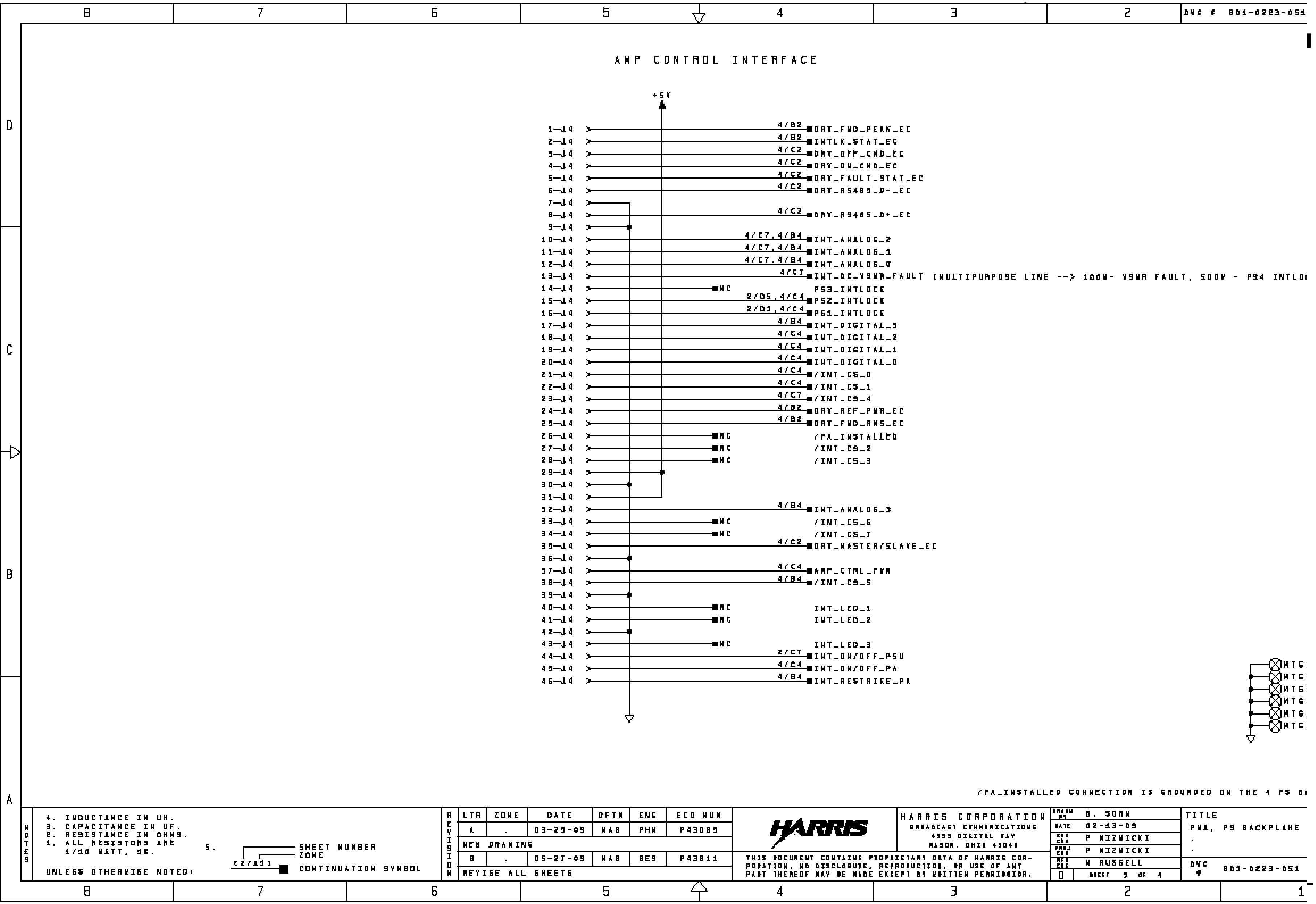
TITLE PWA, PS BACKPLANE

DWG # 801-0223-051



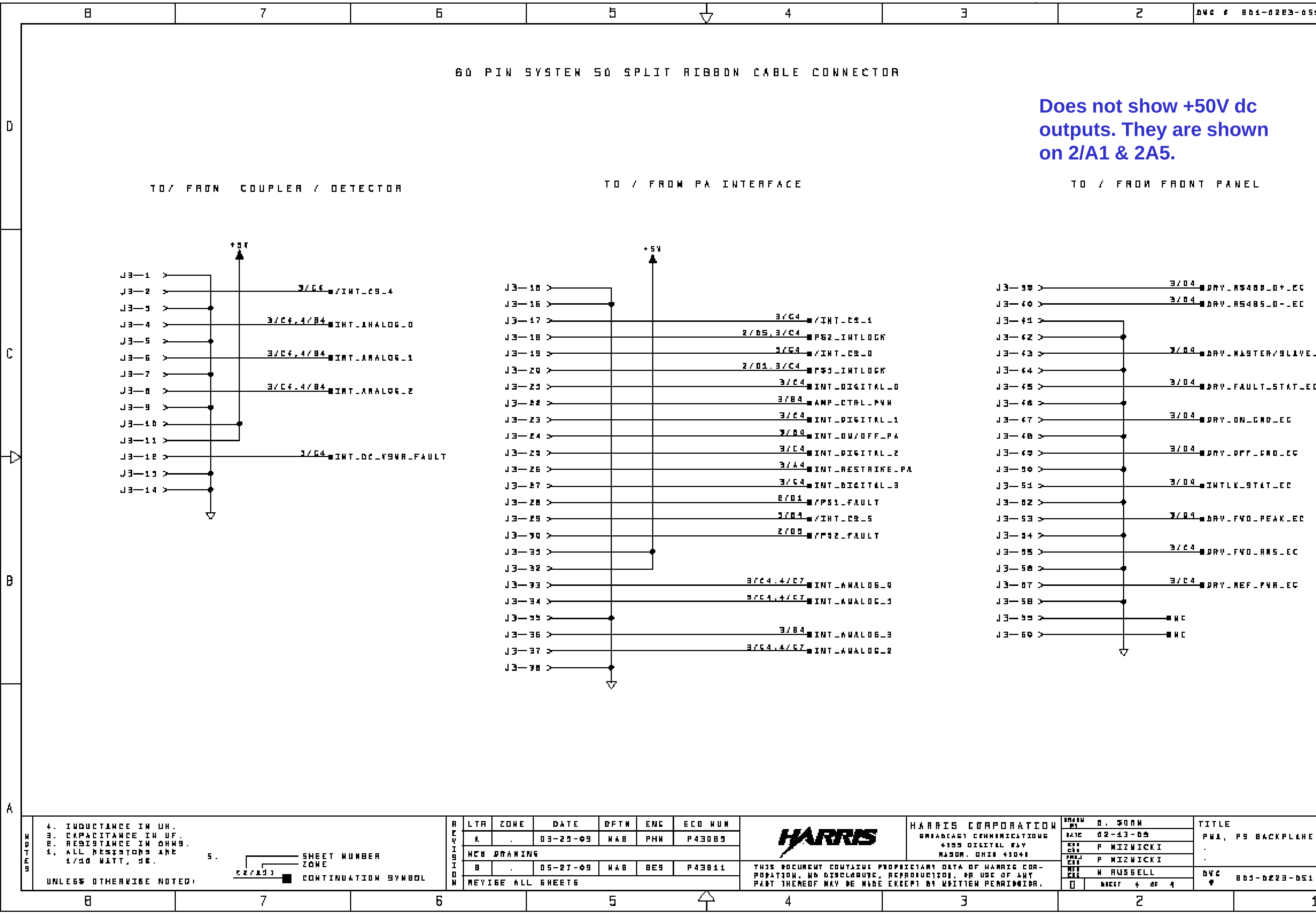
Goes to jack 2.
POWER SUPPLY 2
Pulls up fault line.
POWER SUPPLY 1
Not installed.
Was to be used to change voltages going to PAs.
PS Connectors.
+50V
+50V Return
DO NOT POPULATE
HARRIS CORPORATION
TITLE
PS1, PS BACKPLANE
801-0223-051

HARRIS



AMP CONTROL INTERFACE
+5V
1-J4 4/B2 ORT_FWD_PEAK_EC
2-J4 4/B2 INTLK_STAT_EC
3-J4 4/C2 DRY_OFF_CMD_EC
4-J4 4/C2 DRY_ON_CMD_EC
5-J4 4/C2 DRY_FAULT_STAT_EC
6-J4 4/C2 ORT_RS485_D-_EC
7-J4
8-J4 4/C2 DRY_RS485_D+_EC
9-J4
10-J4 4/C7,4/B4 INT_ANALOG_2
11-J4 4/C7,4/B4 INT_ANALOG_1
12-J4 4/C7,4/B4 INT_ANALOG_0
13-J4 4/C7 INT_DC_VSWR_FAULT (MULTIPURPOSE LINE --> 100W- VSWR FAULT, 500W - PS4 INTLO
14-J4 NC PS3_INTLOCK
15-J4 2/D5,4/C4 PS2_INTLOCK
16-J4 2/D1,4/C4 PS1_INTLOCK
17-J4 4/B4 INT_DIGITAL_3
18-J4 4/C4 INT_DIGITAL_2
19-J4 4/C4 INT_DIGITAL_1
20-J4 4/C4 INT_DIGITAL_0
21-J4 4/C4 /INT_CS_0
22-J4 4/C4 /INT_CS_1
23-J4 4/C7 /INT_CS_4
24-J4 4/B2 ORT_REF_PWR_EC
25-J4 4/B2 ORT_FWD_RMS_EC
26-J4 NC /PA_INSTALLED
27-J4 NC /INT_CS_2
28-J4 NC /INT_CS_3
29-J4
30-J4
31-J4
32-J4 4/B4 INT_ANALOG_3
33-J4 NC /INT_CS_6
34-J4 NC /INT_CS_7
35-J4 4/C2 ORT_MASTER/SLAVE_EC
36-J4
37-J4 4/C4 AMP_CTRL_PWM
38-J4 4/B4 /INT_CS_5
39-J4
40-J4 NC INT_LED_1
41-J4 NC INT_LED_2
42-J4
43-J4 NC INT_LED_3
44-J4 2/C7 INT_ON/OFF_PSU
45-J4 4/C4 INT_ON/OFF_PA
46-J4 4/B4 INT_RESTRIKE_PA
/PA_INSTALLED CONNECTION IS GROUNDED ON THE 4 PS B
4. INDUCTANCE IN UH.
3. CAPACITANCE IN UF.
2. RESISTANCE IN OHMS.
1. ALL RESISTORS ARE 1/10 WATT, 5%.
UNLESS OTHERWISE NOTED:
SHEET NUMBER
ZONE
CONTINUATION SYMBOL
LTR ZONE DATE DFTM ENG ECO NUM
A . 03-25-05 WAB PHM P43085
NEW DRAWING
B . 05-27-05 WAB BES P43811
REVISE ALL SHEETS
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
4393 DIGITAL WAY
MASON, OHIO 45040
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D. SOMM
02-13-05
P MIZWICKI
P MIZWICKI
W RUSSELL
SHEET 3 OF 4
TITLE
PW1, PS BACKPLANE
DWG # 801-0223-051

HARRIS

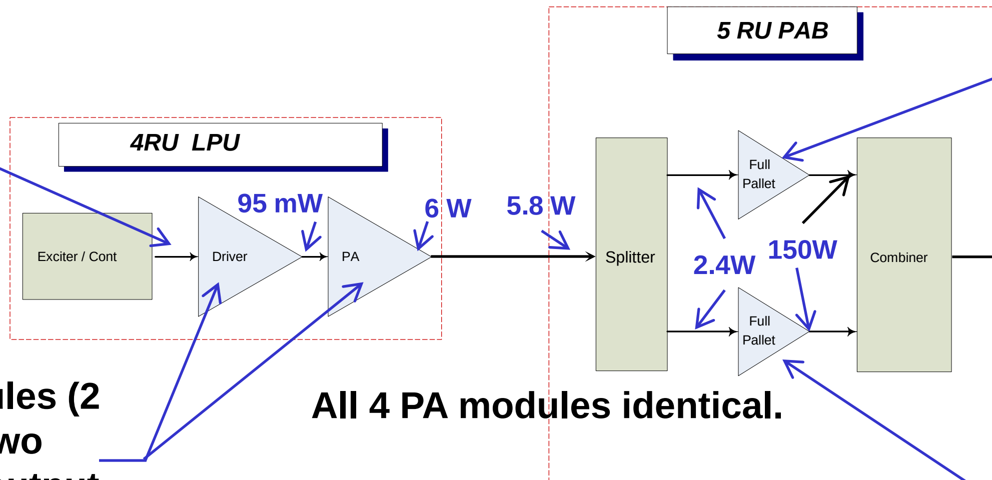


60 PIN SYSTEM SD SPLIT RIBBON CABLE CONNECTOR
Does not show +50V dc outputs. They are shown on 2/A1 & 2A5.
TO/ FROM COUPLER / DETECTOR
TO / FROM PA INTERFACE
TO / FROM FRONT PANEL
+5V
/INT_CS_4
INT_ANALOG_0
INT_ANALOG_1
INT_ANALOG_2
INT_DC_VSWR_FAULT
/INT_CS_1
PS2_INTLOCK
/INT_CS_0
PS1_INTLOCK
INT_DIGITAL_0
AMP_CTRL_PWM
INT_DIGITAL_1
INT_ON/OFF_PA
INT_DIGITAL_2
INT_RESTRIKE_PA
INT_DIGITAL_3
/PS1_FAULT
/INT_CS_5
/PS2_FAULT
INT_ANALOG_0
INT_ANALOG_1
INT_ANALOG_3
INT_ANALOG_2
DRV_RS485_O+_EC
DRV_RS485_O-_EC
DRV_FAULT_STAT_EC
DRV_ON_CMD_EC
DRV_OFF_CMD_EC
INTLK_STAT_EC
DRV_FWD_PEAK_EC
DRV_FWD_AMS_EC
DRV_REF_PWR_EC
NC
NOTES
4. INDUCTANCE IN UH.
3. CAPACITANCE IN UF.
2. RESISTANCE IN OHMS.
1. ALL RESISTORS ARE 1/10 WATT, 5%.
UNLESS OTHERWISE NOTED:
SHEET NUMBER
ZONE
CONTINUATION SYMBOL
NEW DRAWING
REVISE ALL SHEETS
03-25-09
05-27-09
P43085
P43811
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
4393 DIGITAL WAY
MASON, OHIO 45040
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02-13-09
P MIZWICKI
W RUSSELL
TITLE
PW1, PS BACKPLANE
DWG # 801-0223-051
SHEET 4 OF 4

250W (375W) Block Diagram

75 mW & 9dB pad to 2 mW

PA Module (pallet with two FET's)



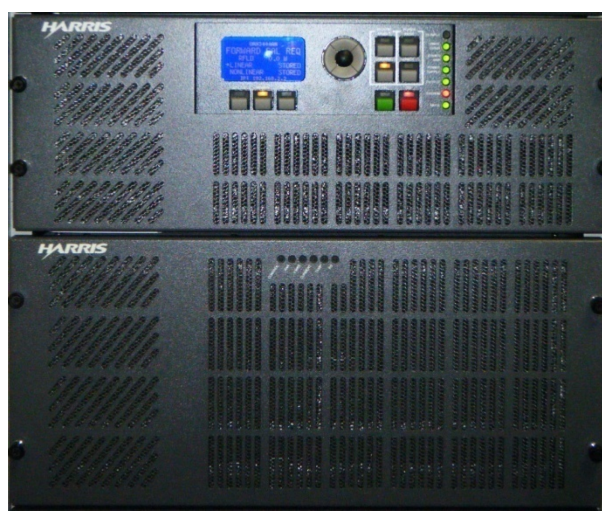
250W (375)

Power levels shown are estimates.

Two PA Modules (2 pallets with two FET's). Low output power, little chance of failure.

PA Module (pallet with two FET's)

LPU

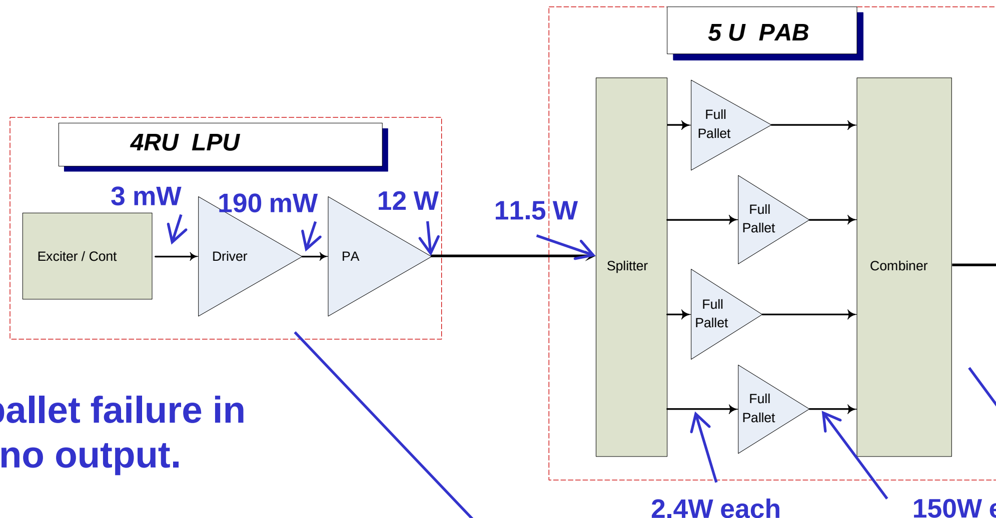


100W version of LPU

9RU=15.75"

PAB Power Amplifier Block

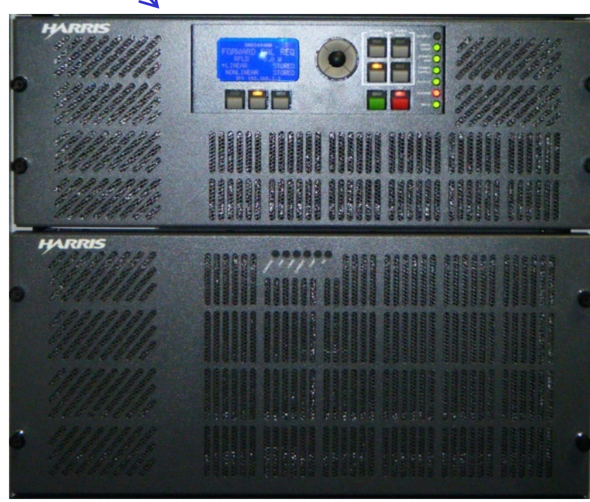
500W (750W) Block Diagram



500 W

Power levels shown are estimates.

PS or amp pallet failure in LPU causes no output.

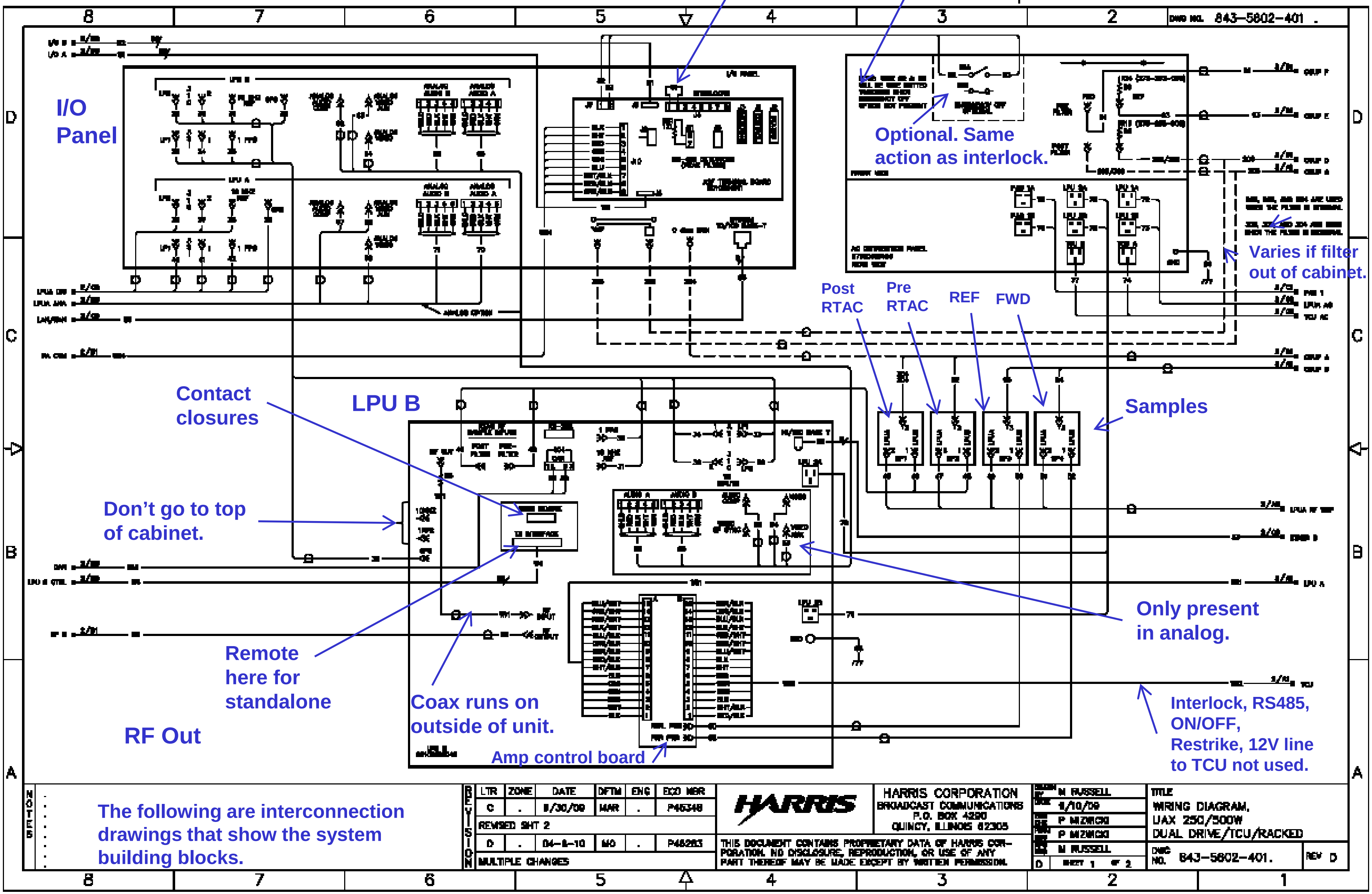


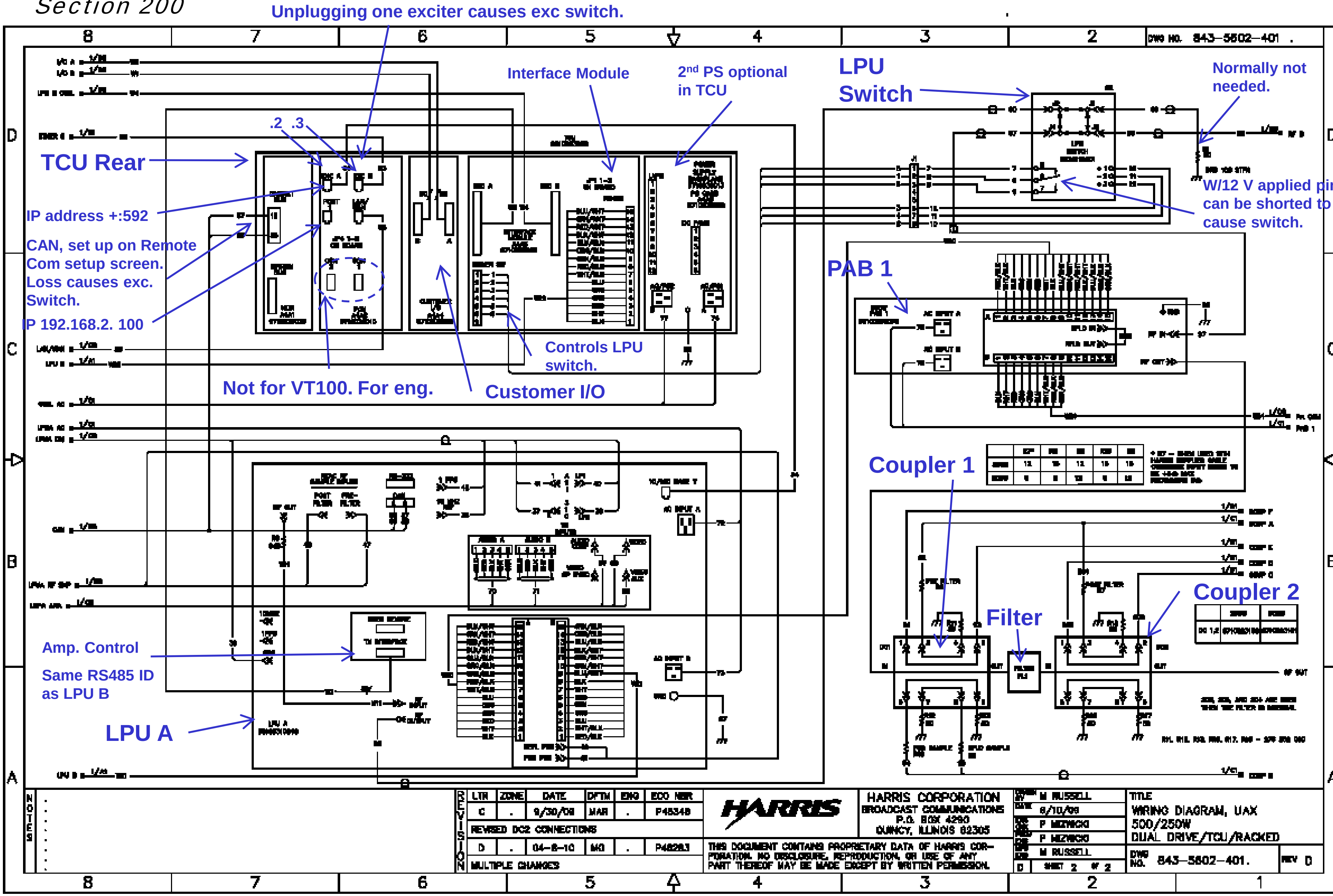
LPU

9RU=15.75”

P_{out} = (# good amps/total # amps)^2

PAB
Power Amplifier Block


Interlock
AC Distribution Panel
I/O Panel
Optional. Same action as interlock.
Varies if filter out of cabinet.
Post RTAC
Pre RTAC
REF
FWD
Contact closures
LPU B
Samples
Don't go to top of cabinet.
Only present in analog.
Remote here for standalone
Coax runs on outside of unit.
Interlock, RS485, ON/OFF, Restrike, 12V line to TCU not used.
RF Out
Amp control board
The following are interconnection drawings that show the system building blocks.
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
P.O. BOX 4290
QUINCY, ILLINOIS 62305
WIRING DIAGRAM,
UAX 250/500W
DUAL DRIVE/TCU/RACKED
843-5602-401


Unplugging one exciter causes exc switch.
Interface Module
2nd PS optional in TCU
LPU Switch
Normally not needed.
.2 .3
TCU Rear
IP address +:592
CAN, set up on Remote Com setup screen. Loss causes exc. Switch.
IP 192.168.2. 100
W/12 V applied pin can be shorted to cause switch.
PAB 1
Controls LPU switch.
Not for VT100. For eng.
Customer I/O
Coupler 1
Coupler 2
Filter
Amp. Control
Same RS485 ID as LPU B
LPU A
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
P.O. BOX 4290
QUINCY, ILLINOIS 62305
WIRING DIAGRAM, UAX
500/250W
DUAL DRIVE/TCU/RACKED
843-5602-401

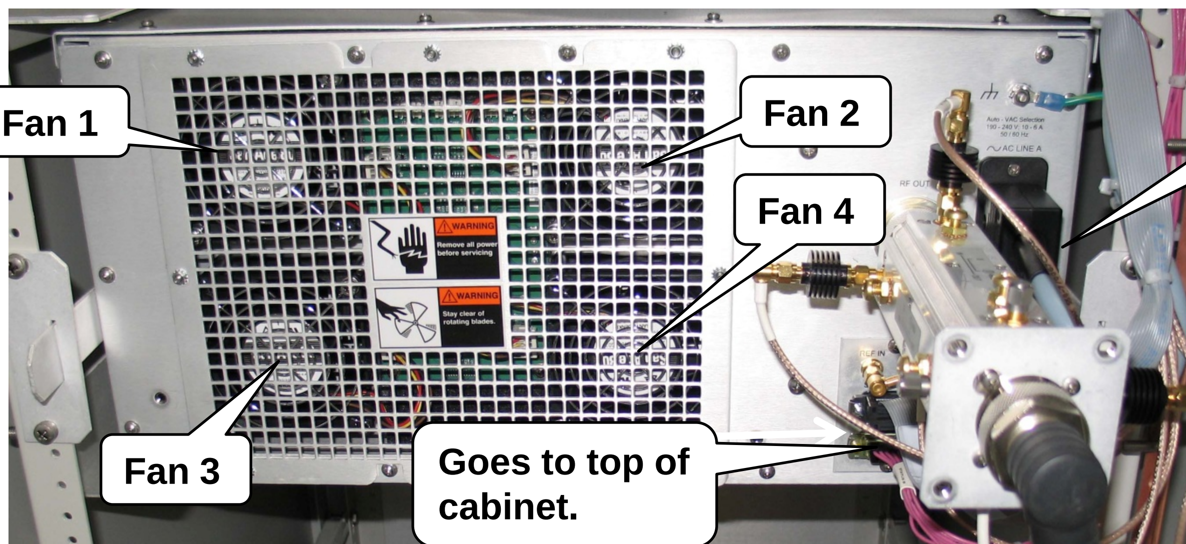
500W PAB (Power Amplifier Block)



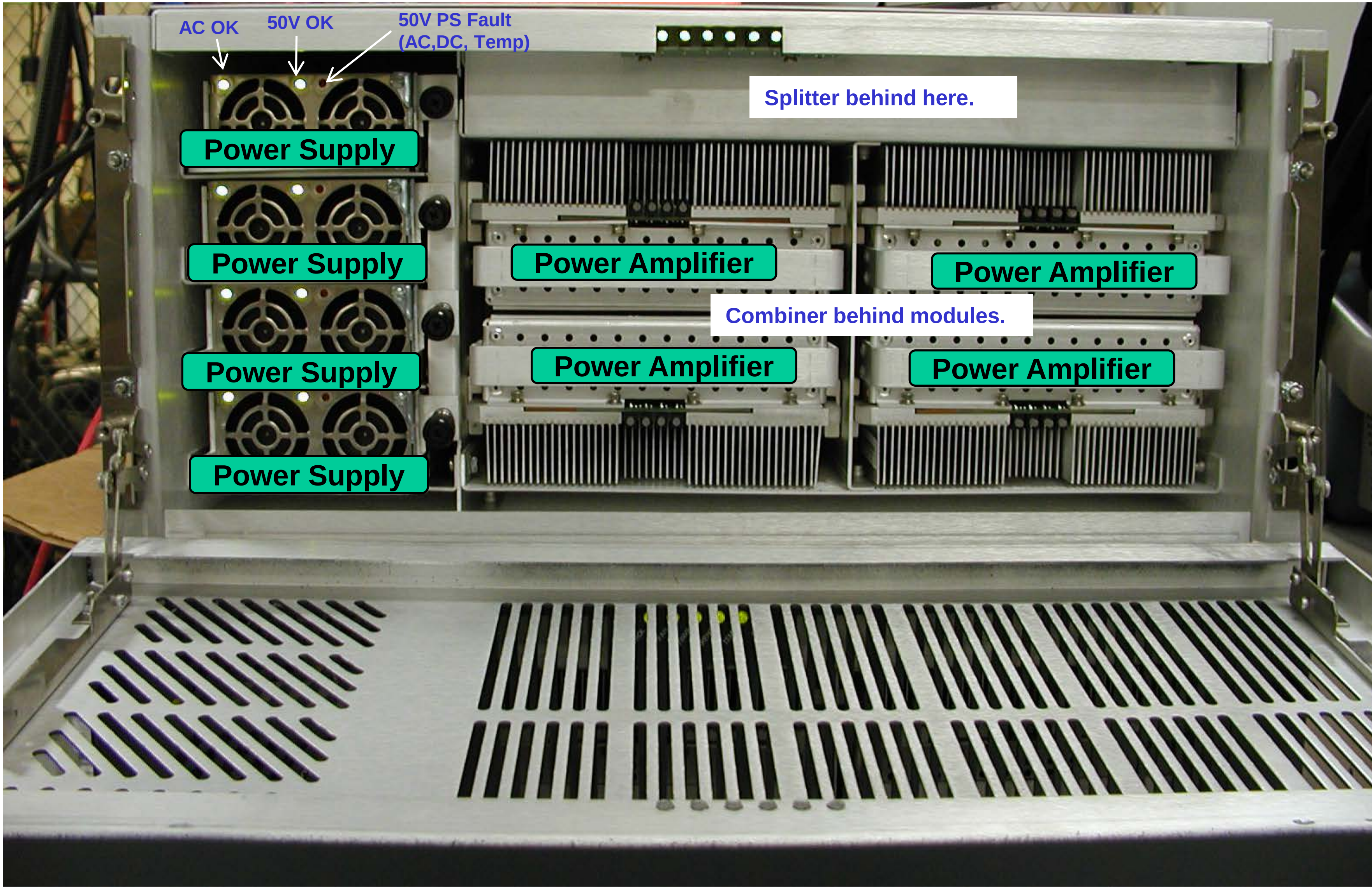
PAB Front

(Filter & PA modules removed)

PAB Rear



500W PAB – Front View



PS & Module – LED's

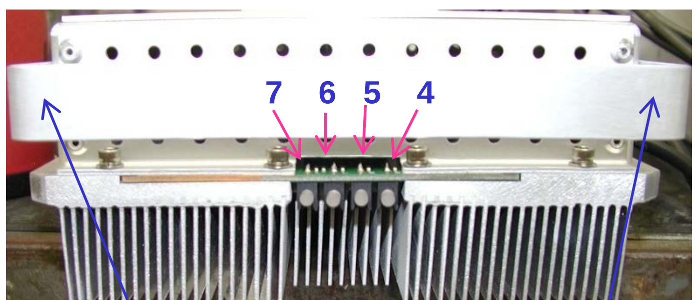
HARRIS

	Name	SS Marking	Normal Color	Faulted Color	Comments
1	Power Supply AC OK	NA	GREEN	OFF	Green when AC is applied and within acceptable Range
2	Power Supply DC OK	NA	GREEN	OFF	Green when DC Ouput is enabled and within the acceptable Range
3	Power Supply Fault	NA	OFF	RED	Red when Power Supply detects an internal Over Temperature or Over Current
4	Power Amp Undervoltage	UV	OFF	RED	Red when Power Amp detects that the input voltage has dropped to XXXX
5	Power Amp Overvoltage	OV	OFF	RED	Red when Power Amp detects that the input voltage has exceeded XXXX
6	Power Amp Temperature Fault	T	OFF	RED	Red when Power Amp detects that the temperature has exceeded XXXX
7	Power Amp Overcurrent	I	OFF	RED	Red when the Power Amp detects that the current has exceeded XXXX
8	HPU Control Fault Summary	CONTROL	GREEN	AMBER	Amber when any Control fault in the offending HPU is detected
9	HPU Fan Fault Summary	FAN	GREEN	AMBER	Amber when any Fan fault in the offending HPU is detected
10	HPU VSWR Fault Summary	VSWR	GREEN	AMBER	Amber when any PA VSWR fault in the offending HPU is detected
11	HPU Current Fault Summary	CURRENT	GREEN	AMBER	Amber when any PA Overcurrent fault in the offending HPU is detected
12	HPU Temperature Fault Summary	TEMP	GREEN	AMBER	Amber when any PA Overtemperature fault in the offending HPU is detected
13	HPU Power Supply Fault Summary	PS	GREEN	AMBER	Amber when any Power Supply fault in the offending HPU is detected



Front of PS Modules

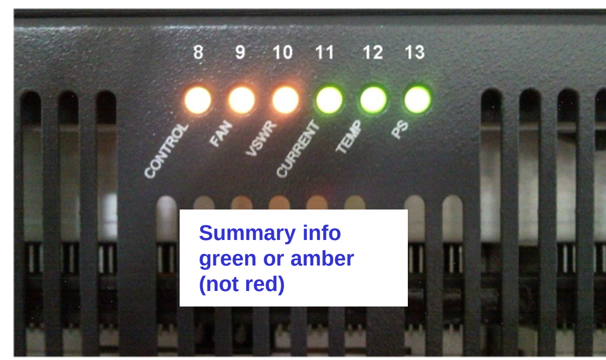
LEDs self contained on modules.



Front of PA Module

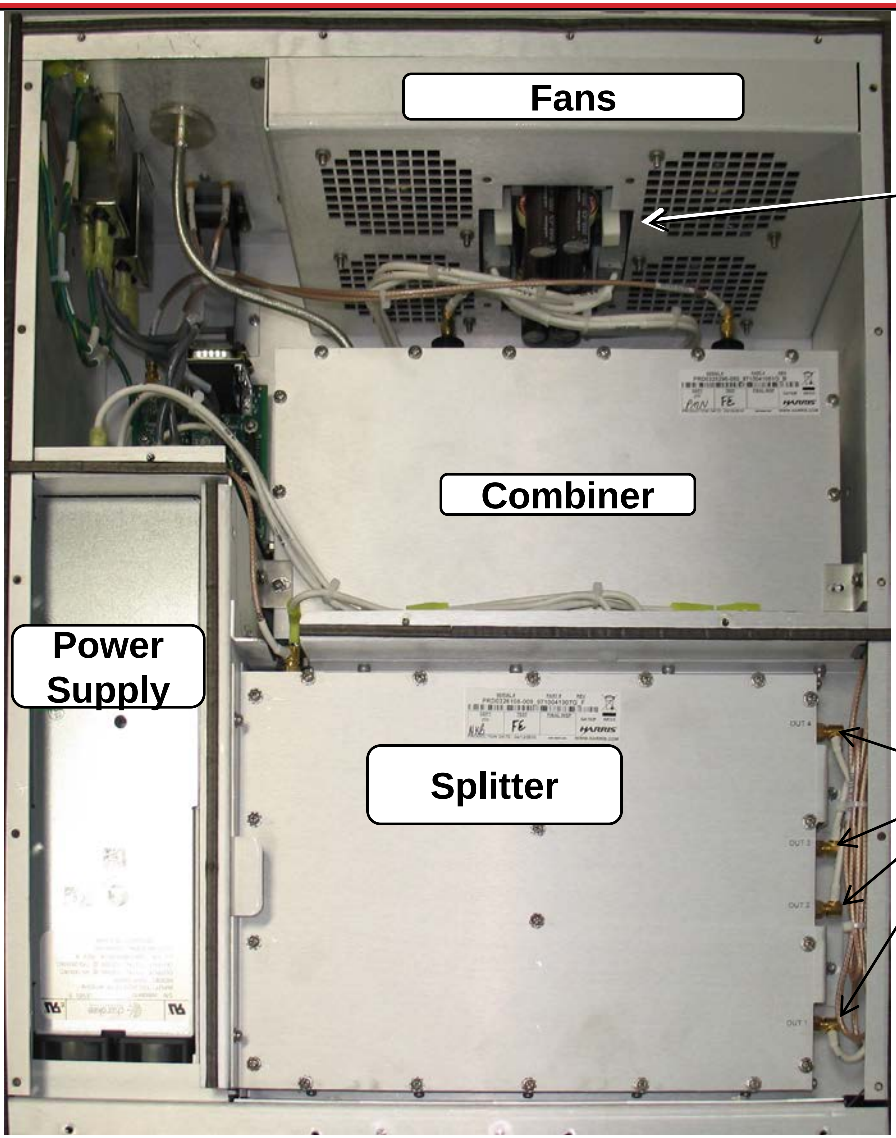
Push or pull here to avoid bending handle.

4. **PA under voltage = <46V**
5. **5 PA over voltage > 53V**
6. **PA temperature fault 85º C**
7. **PA Overcurrent > 14A**



Front of PAB (also called HPU)

500W PAB- Top View



Front of PAB

500W PAB- Top View

Control Monitor (amp interface) Board 901-0223-071

PS Backplane

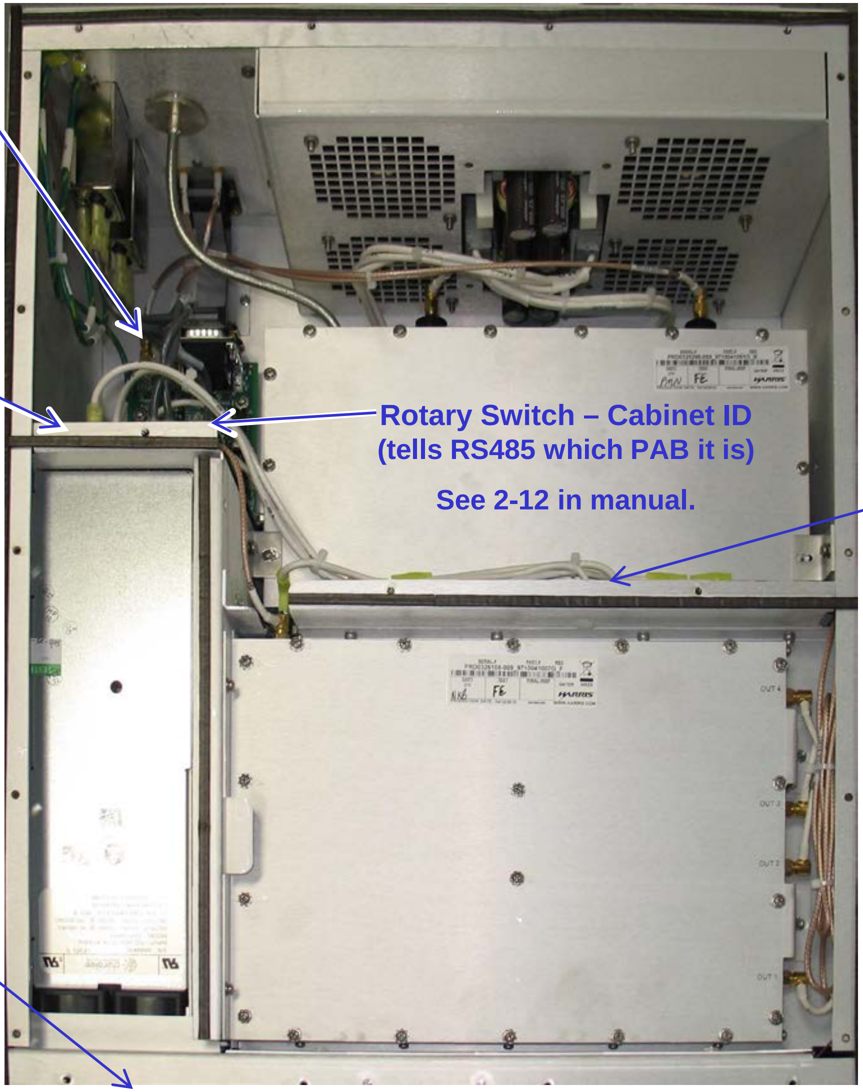
Rotary Switch – Cabinet ID (tells RS485 which PAB it is)

See 2-12 in manual.

PA Backplane

Check push on spade lugs for tightness.

Alarm status board 901-0223-081 also called LED Board on the front of the PAB chassis.

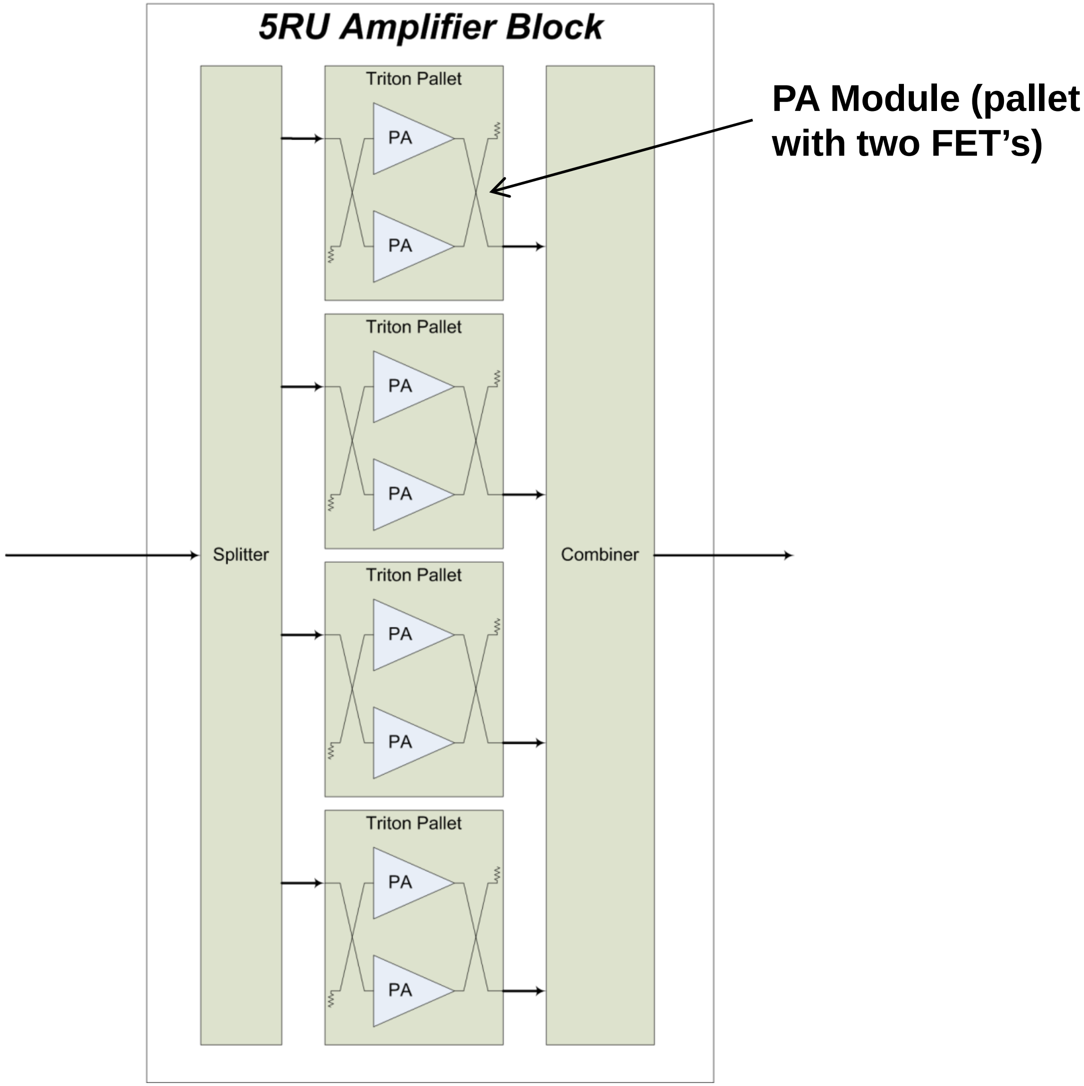


Front of PAB

500W PAB – RF Path

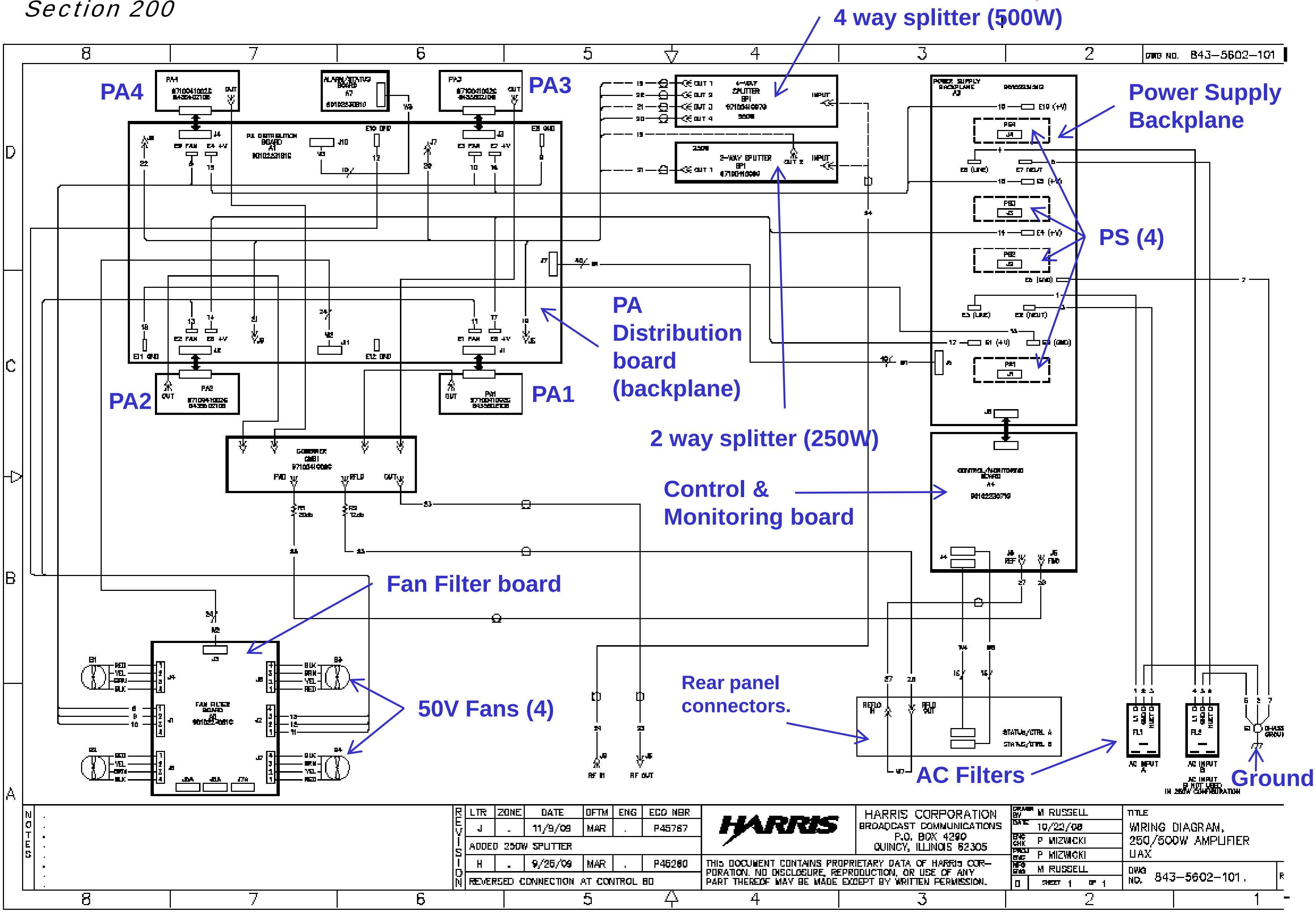
- **The 500 W PAB contains four PA modules and four PS modules.**

- **The 250 W PAB uses the same chassis but only contains two PA modules and two PS modules**



Wiring Diagram 500 W PAB 843-5602-101 (1 of 1)

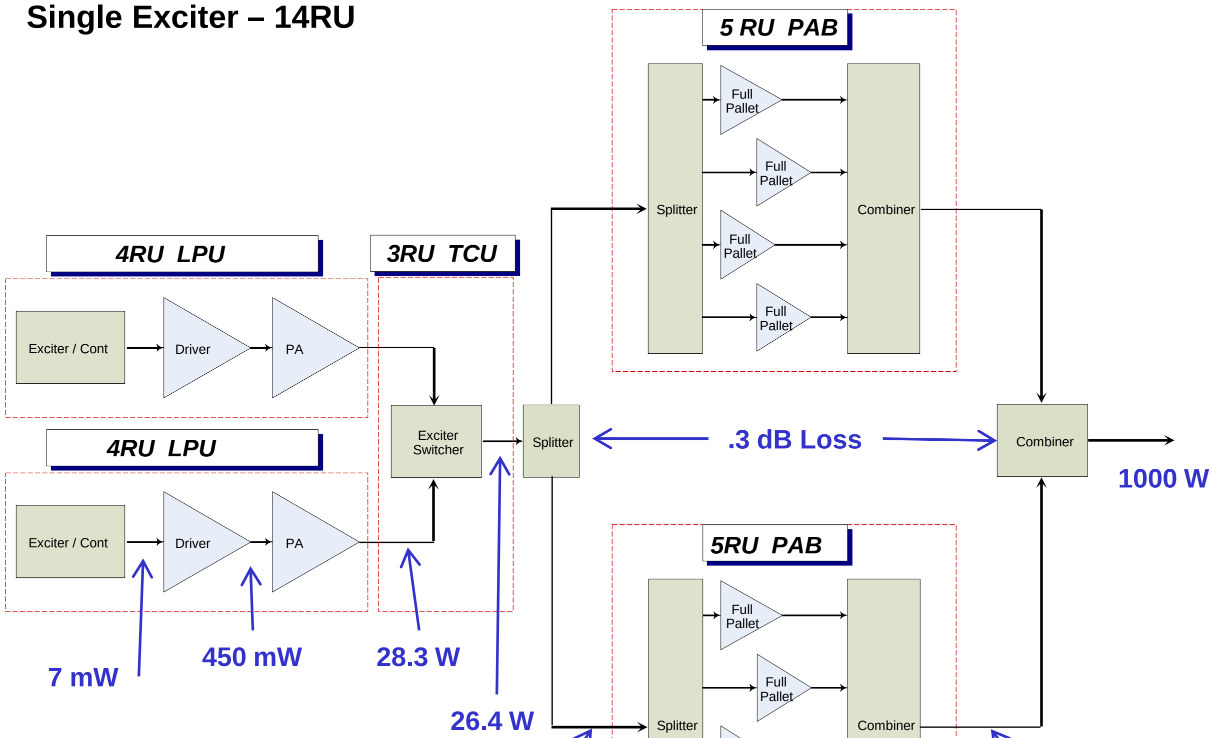
Section 200



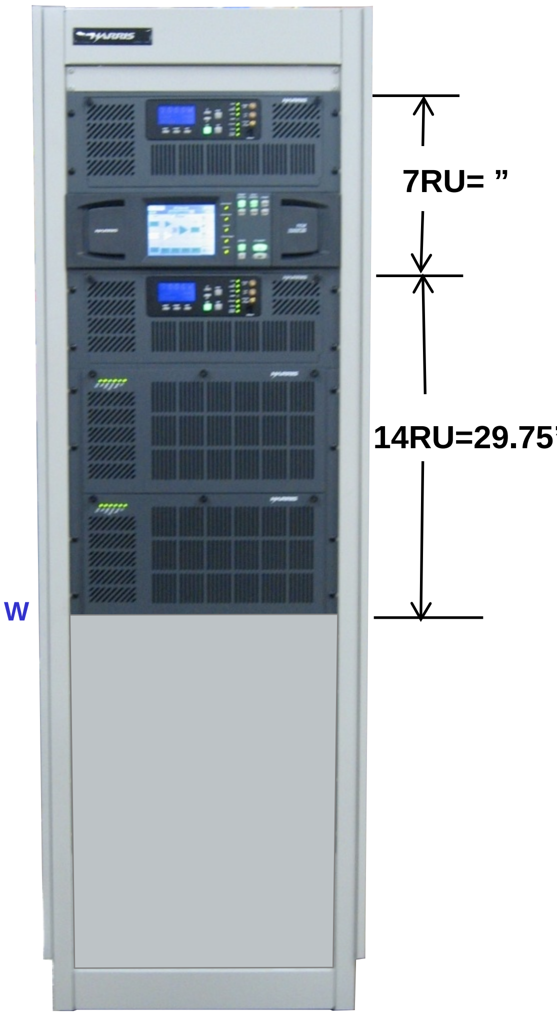
1kW Transmitter Block Diagram

HARRIS

Size:
With Dual Exciters – 21RU
Single Exciter – 14RU



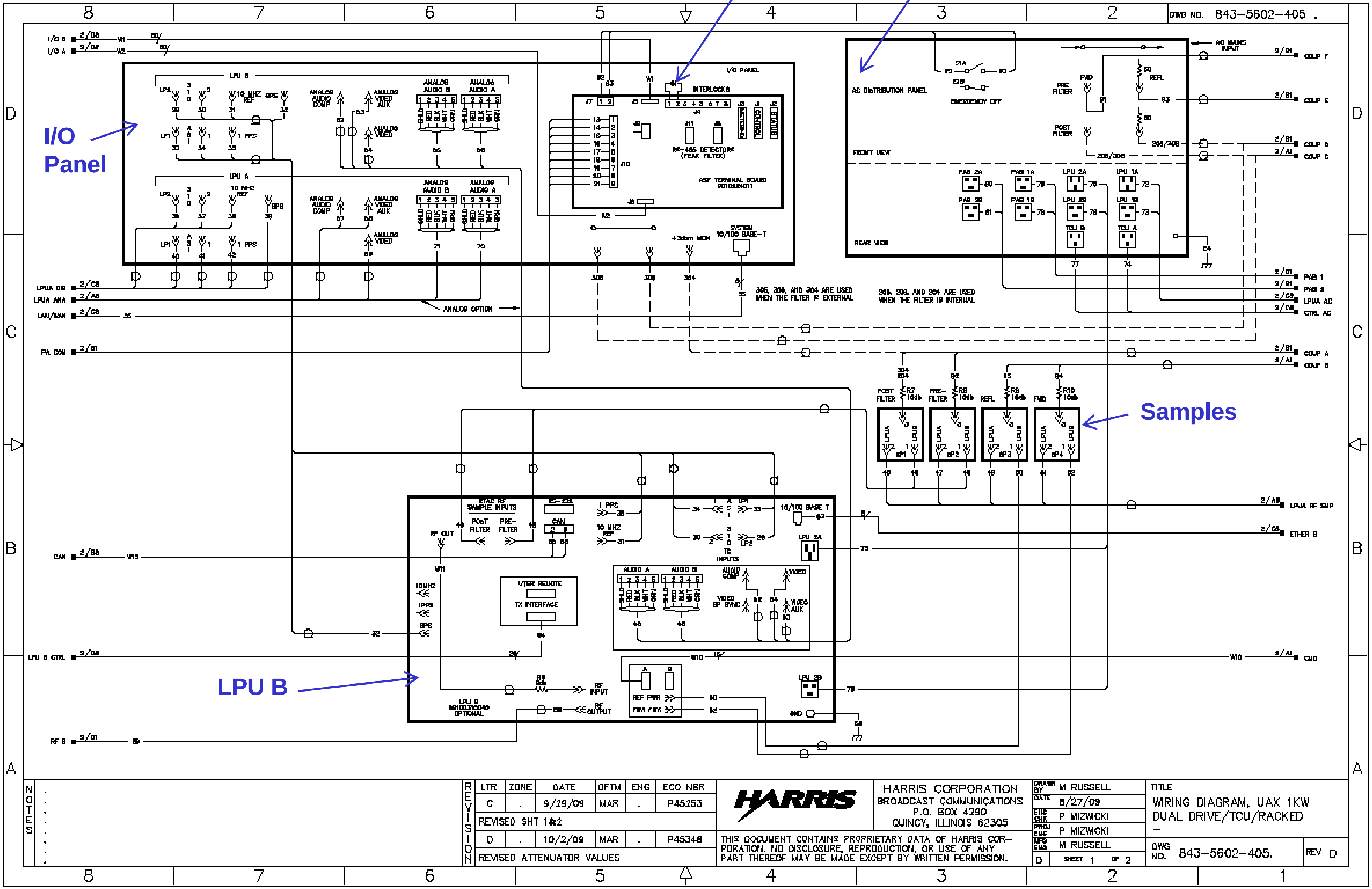
Power levels shown are estimates.

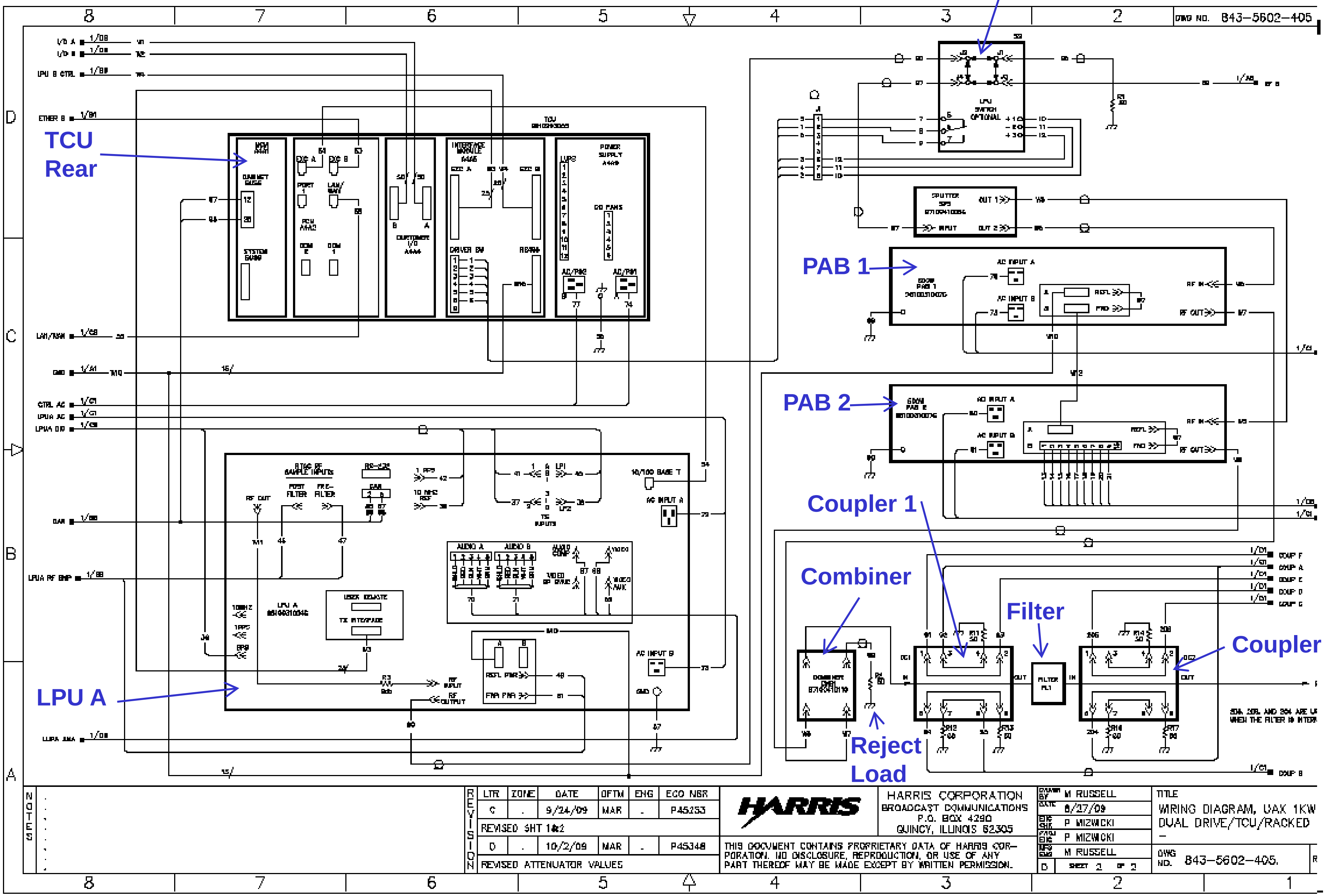


UAX1000 shown with optional dual LPU and rack

Wiring Diagram 1 kW 843-5602-405 (1 of 2)

Section 300

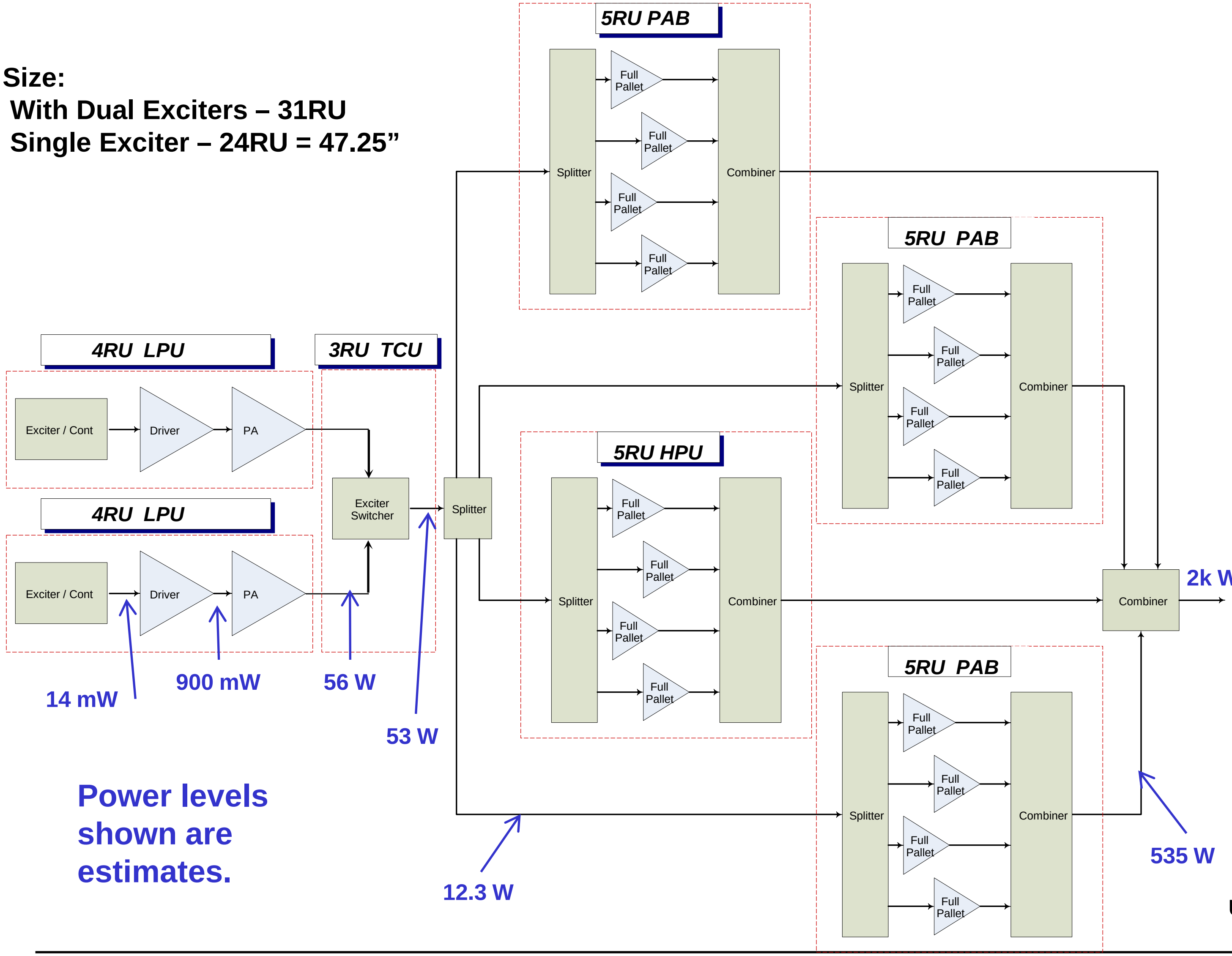




LPU Switch
TCU Rear
PAB 1
PAB 2
Coupler 1
Combiner
Filter
Coupler 2
Reject Load
LPU A
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
P.O. BOX 4290
QUINCY, ILLINOIS 62305
REVISED SHT 1&2
REVISED ATTENUATOR VALUES
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WIRING DIAGRAM, UAX 1KW DUAL DRIVE/TCU/RACKED
843-5602-405

2kW Block Diagram

Size:
With Dual Exciters – 31RU
Single Exciter – 24RU = 47.25"

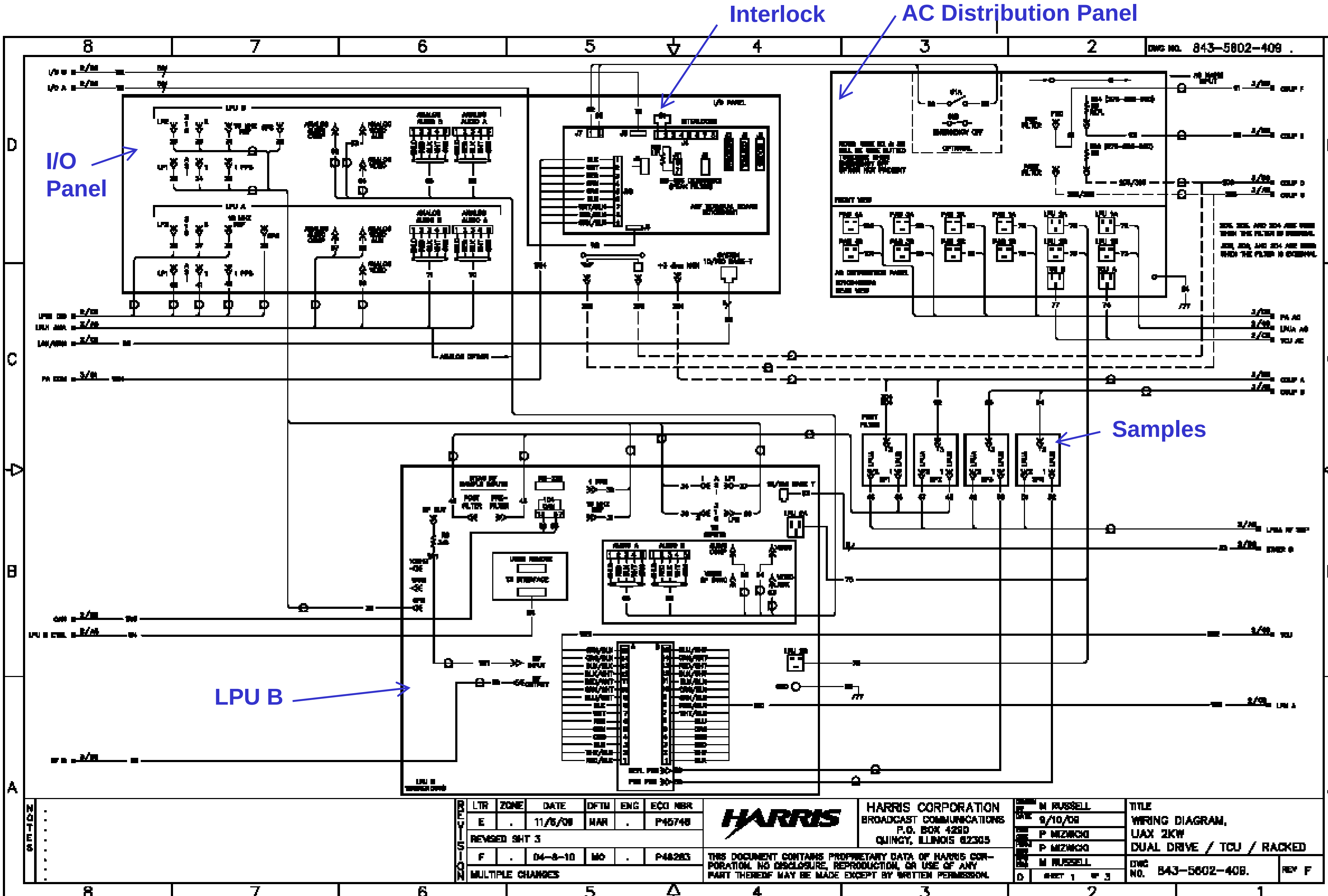


Power levels shown are estimates.

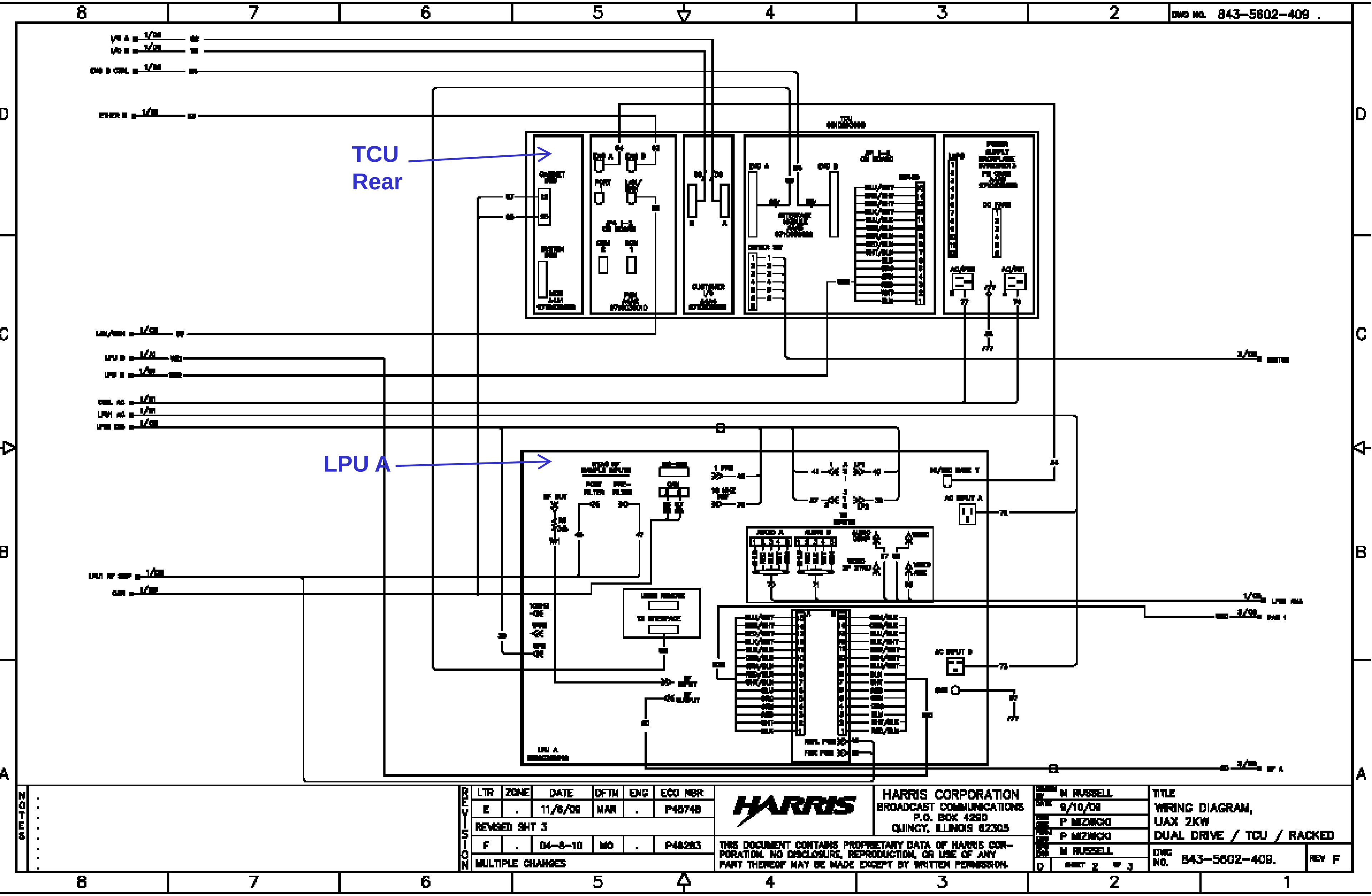


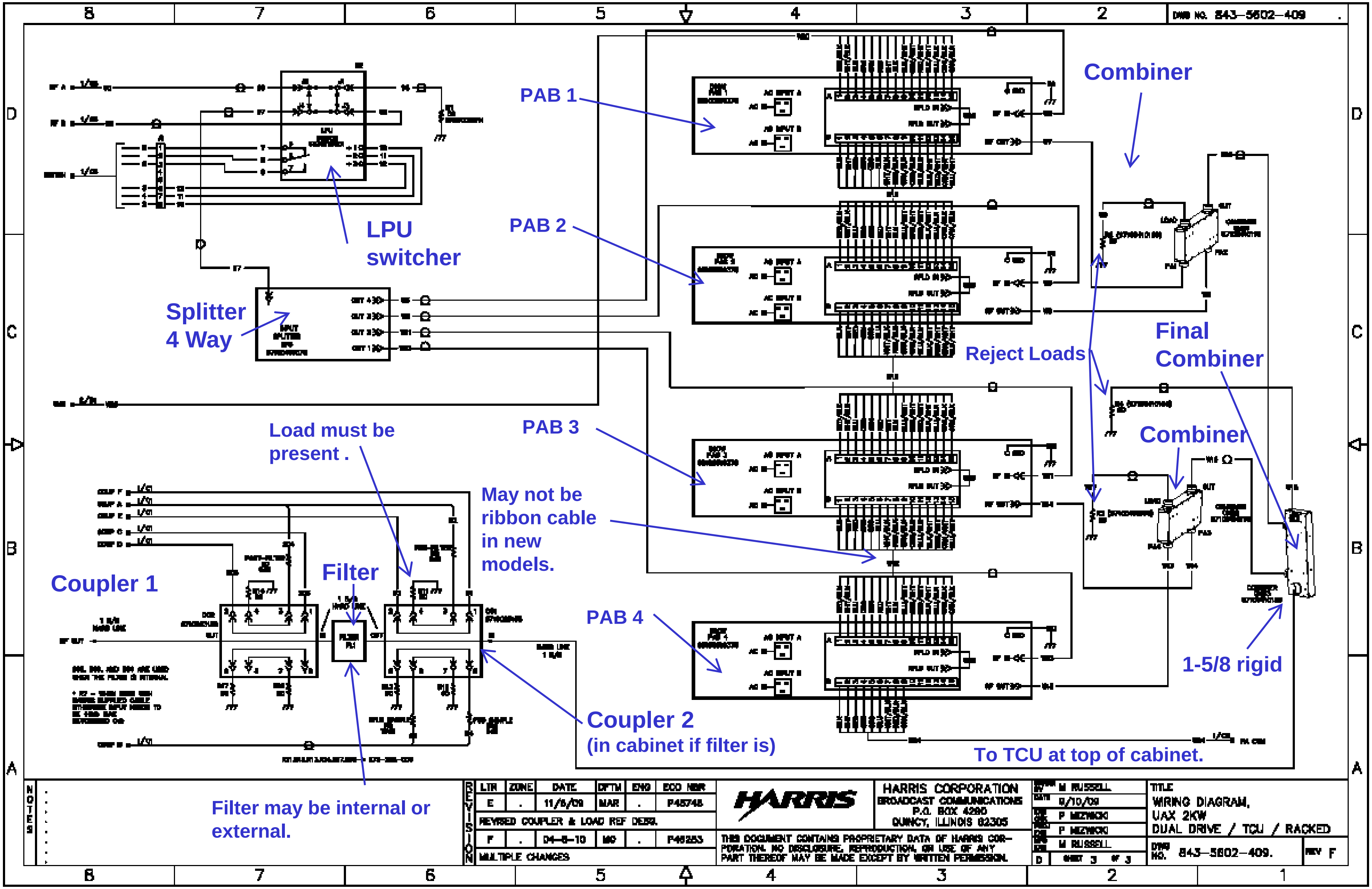
UAX2000 shown with optional dual LPU and rack

HARRIS



Interlock
AC Distribution Panel
I/O Panel
Samples
LPU B
DWG NO. 843-5602-409
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
P.O. BOX 4290
QUINCY, ILLINOIS 62305
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TITLE
WIRING DIAGRAM,
UAX 2KW
DUAL DRIVE / TCU / RACKED
DWG NO. 843-5602-409.
REV F
REVISED SHT 3
MULTIPLE CHANGES


TCU
Rear
LPU A
DWG NO. 843-5602-409
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
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TITLE
WIRING DIAGRAM,
UAX 2KW
DUAL DRIVE / TCU / RACKED
DWG NO. 843-5602-409.
REV F
M RUSSELL
9/10/08
P MIZNICKI
REVISED SHT 3
MULTIPLE CHANGES
P45748
P48283
11/6/08
04-8-10

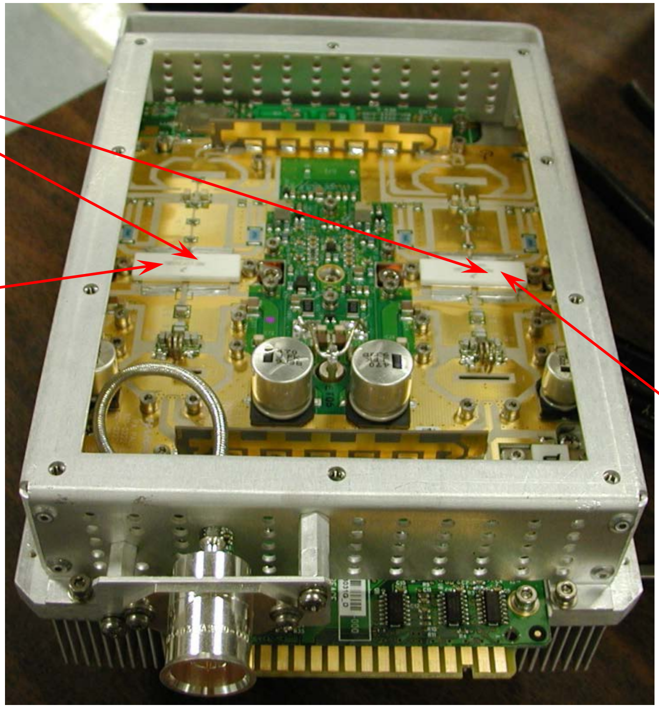


Combiner
PAB 1
LPU switcher
PAB 2
Splitter 4 Way
Reject Loads
Final Combiner
PAB 3
Combiner
Load must be present .
May not be ribbon cable in new models.
Filter
Coupler 1
PAB 4
1-5/8 rigid
Coupler 2
(in cabinet if filter is)
To TCU at top of cabinet.
Filter may be internal or external.
DWG NO. 843-5602-409
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
P.O. BOX 4290
QUINCY, ILLINOIS 62305
TITLE
WIRING DIAGRAM,
UAX 2KW
DUAL DRIVE / TCU / RACKED
REVISED COUPLER & LOAD REF DESG.
MULTIPLE CHANGES
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Maxiva UAX PA Module

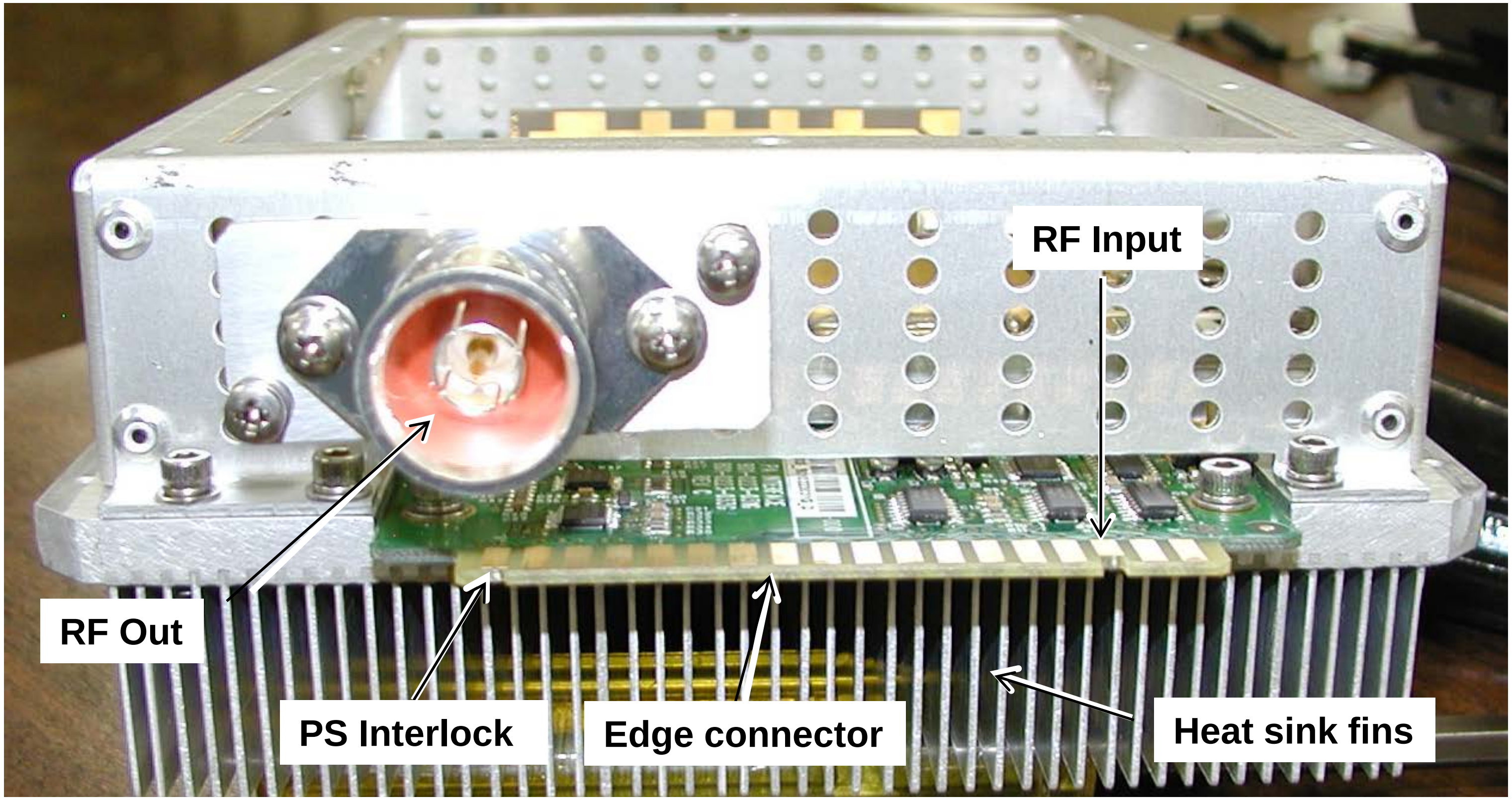
- Two 90 Watt digital RF amplifiers (FET's) per module
- 180 watts (avg.) normal digital operation (90W + 90W). 700-900W peak power per FET.
- Lightweight, hot-pluggable and interchangeable
- Two LDMOS (FET) devices per module
- Broadband UHF – Band IV & V

Weight: ~ 2.3 kg (5.1 pounds)



UAX PA Module (cover removed)

PA Module

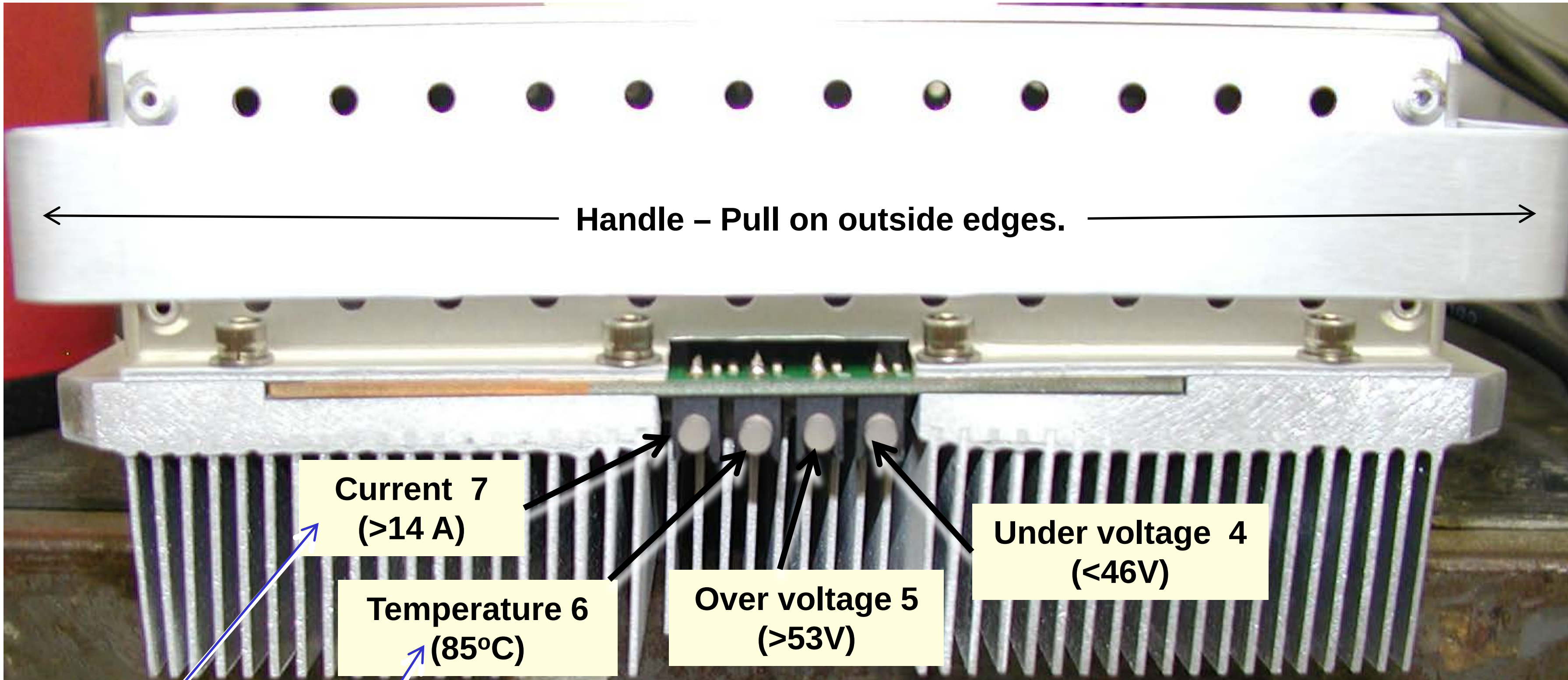


UAX PA Module Rear

See page 2-6 in manual to see modules in PAB.

PA Module

HARRIS



7-8 amps normal

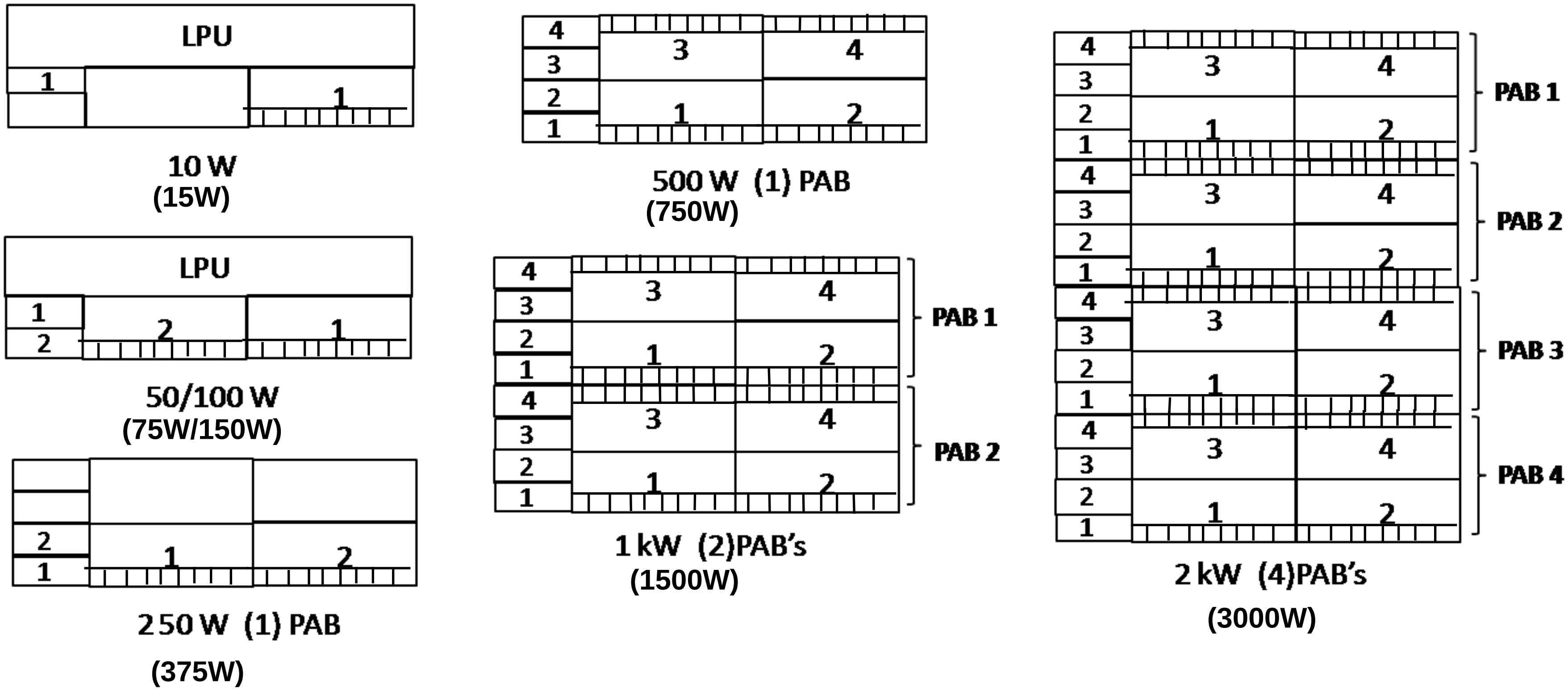
Pallet temp

Front LED's

(LED numbers refer to table on another slide)

These trigger a hard fault when active. Faults are prioritized to deliver only 1 fault at a time. The faults latch after 3 strikes. Faults feed back to GUI.

PS & PA Module Installation

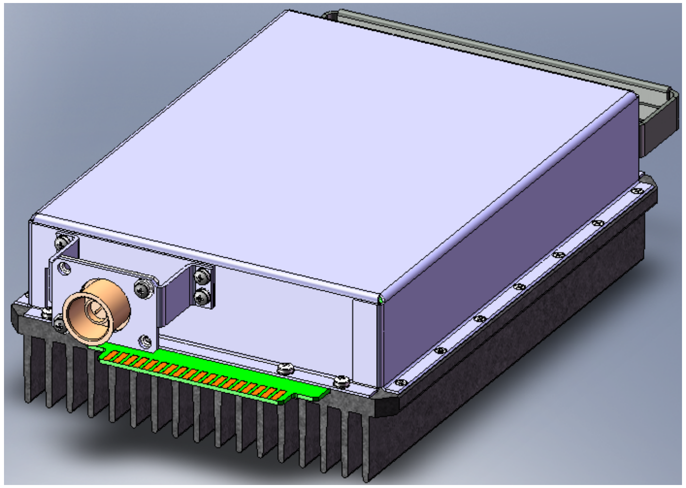


Refer to factory test data to determine module location during test.

Modules should be placed where they were tested.

(analog)

PA Module Assembly



- Based on the Pallet used in Maxiva ULX
- PA Interface Board
  - Self protecting, LED's show faults
- Removable while transmitter running
- 500W block contains four modules

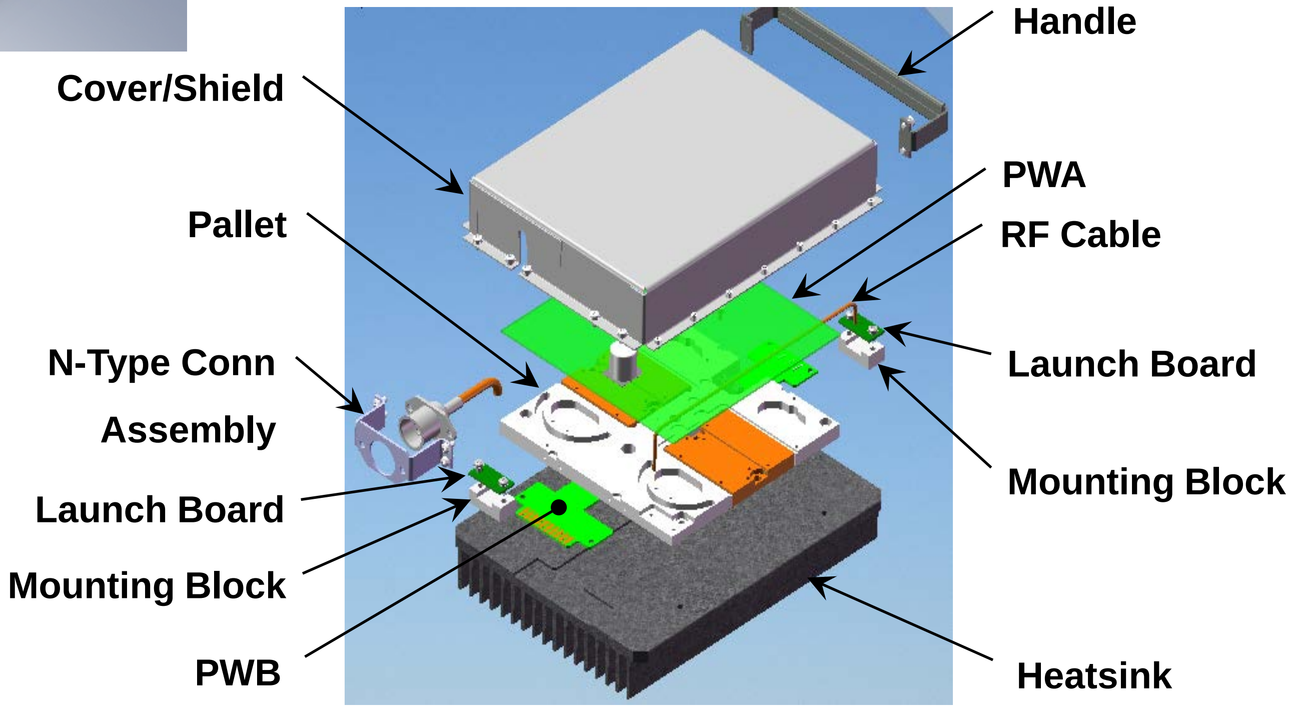


Figure 1: Maxiva PA Module Block Diagram

The following diagrams show the interconnection and layout of the standard Maxiva UAX PA module and the 10 watt output PA module.

Standard PA module diagram shown. 10 W module will vary.

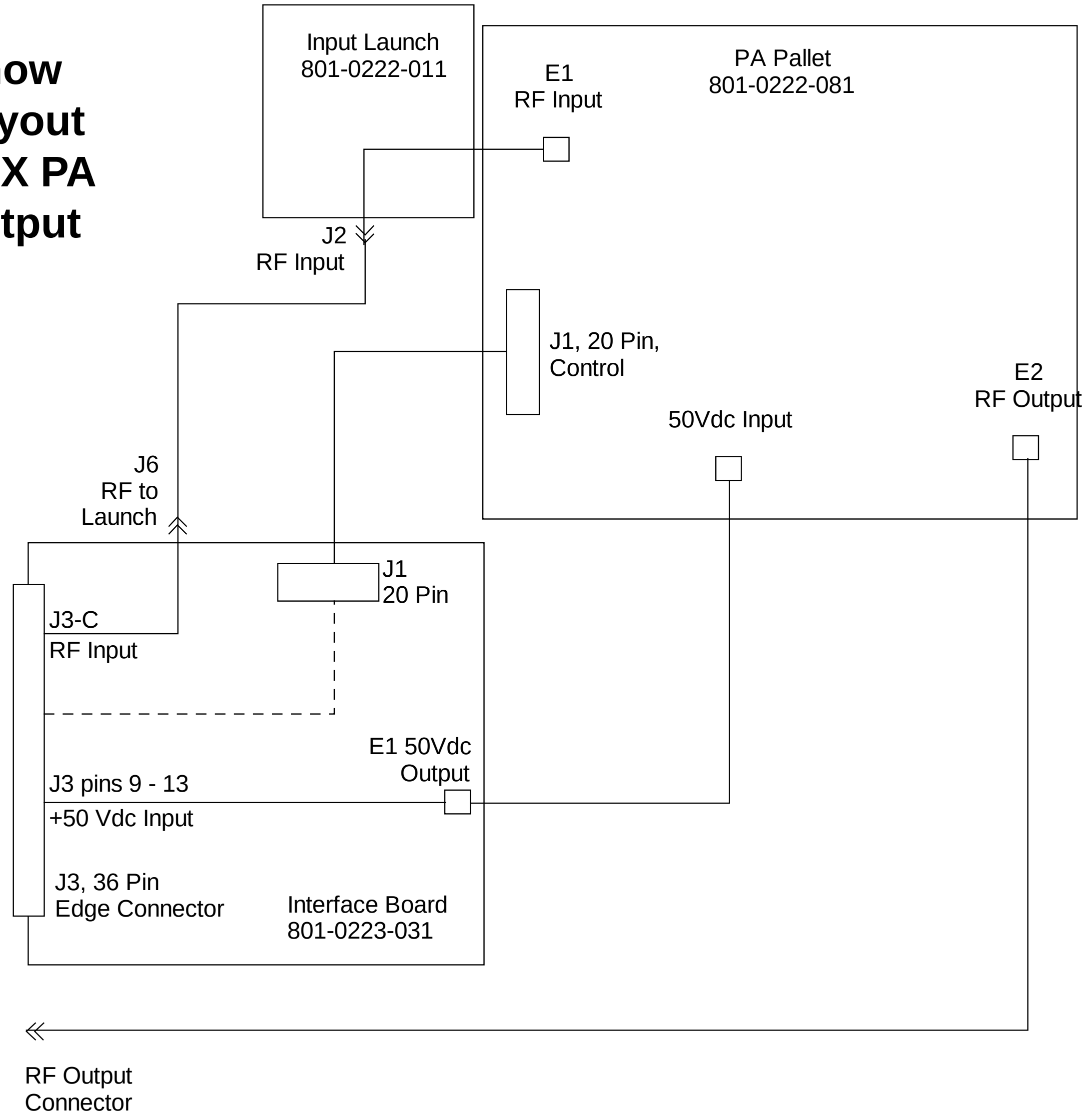
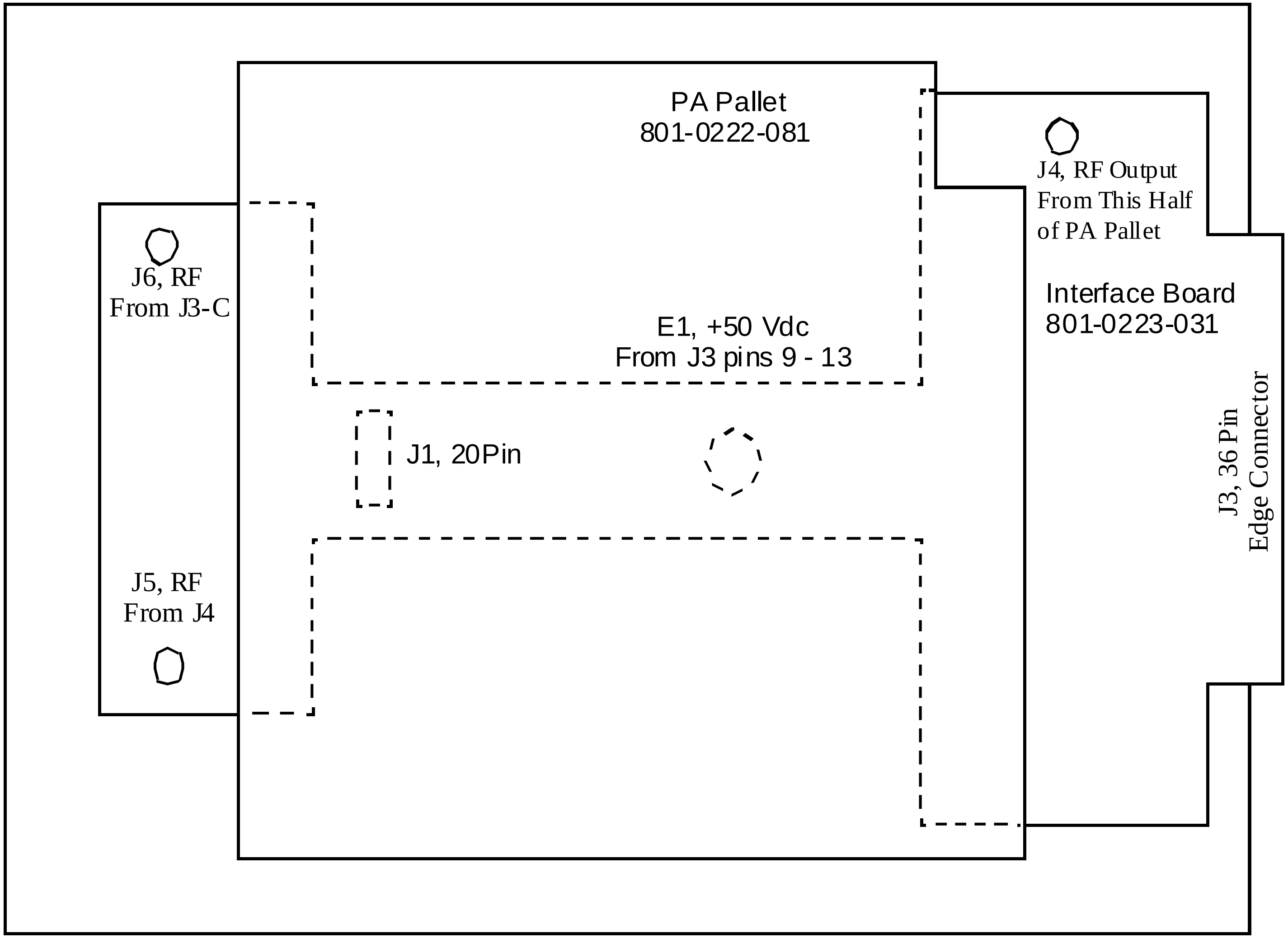


Figure 2: PA Module Showing PA Pallet and Interface Board With Its Connectors



The standard PA pallet board covers a portion of the interface board. That portion of the interface board and its connectors are shown with dotted lines.

Figure 3: PA Module Showing Input Launch Board and PA Pallet With Connectors

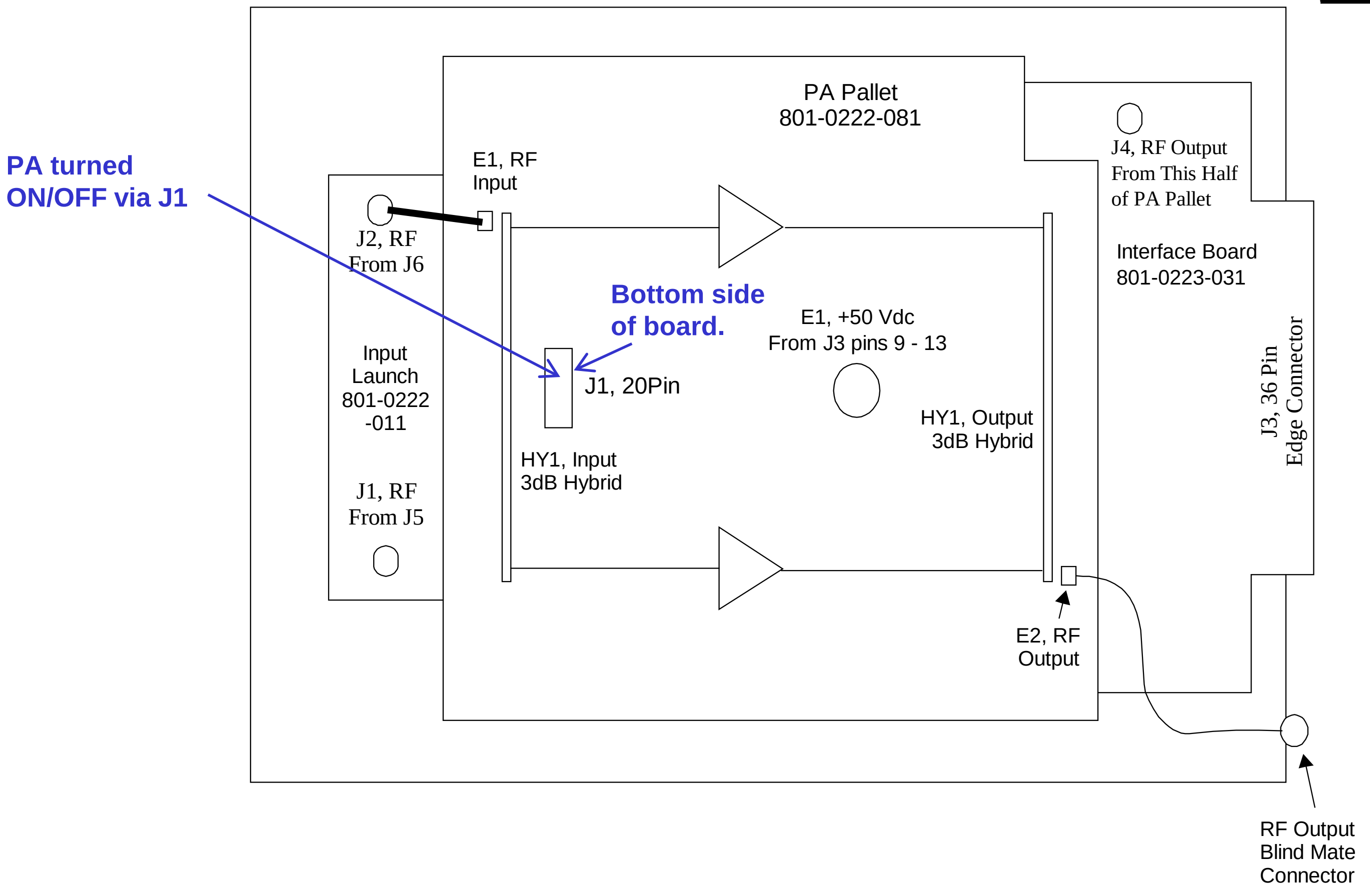
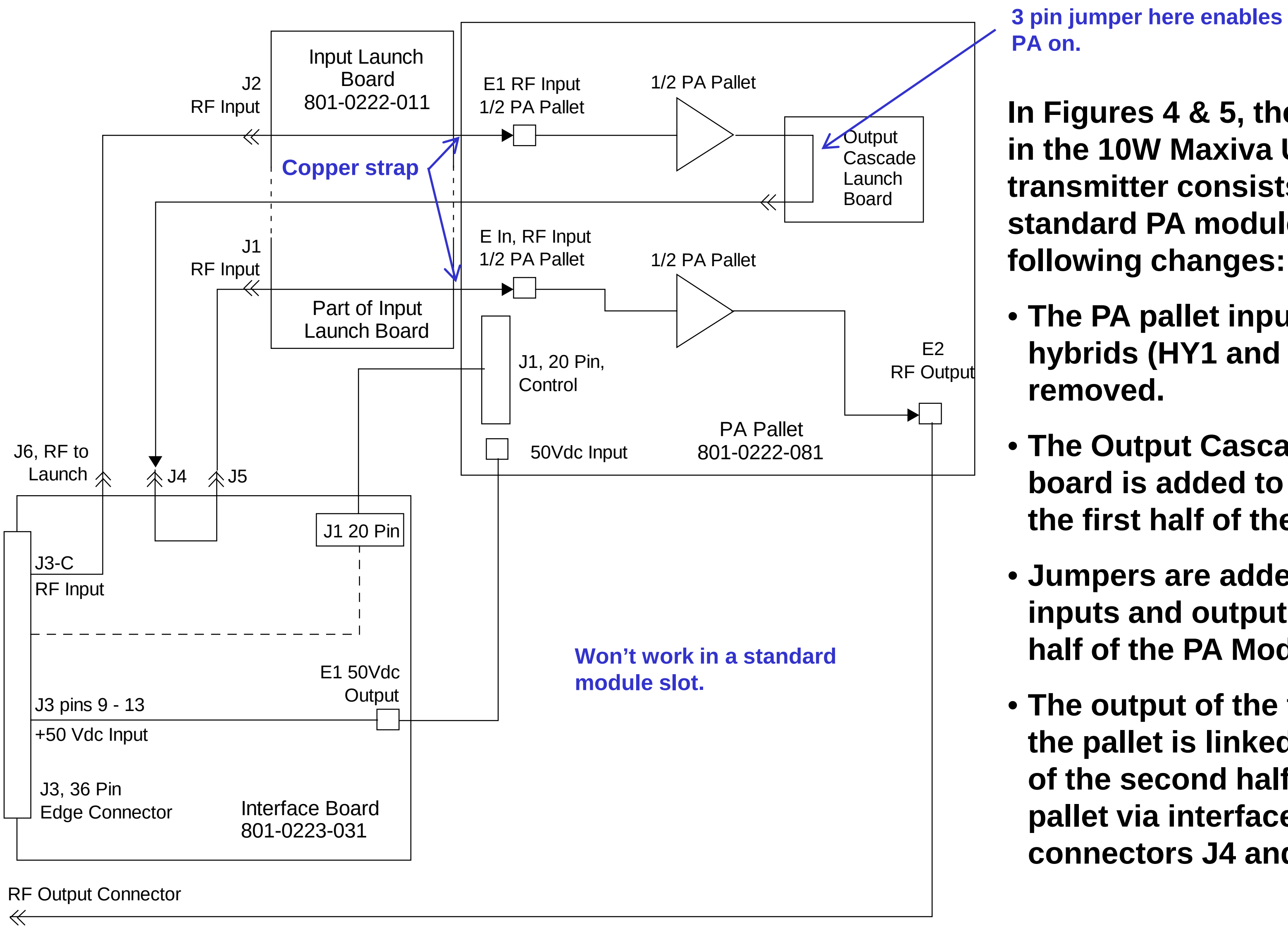


Figure 3 shows part of the interface board, and details of the PA pallet and input launch boards, which sit on top of the remainder of the interface board. RF enters the PA pallet via the input launch board. Connector J6 on the interface board gets its RF input signal from edge connector J3-C and connects vertically to connector J2 of the input launch board. The center conductor of J2 connects to E1, the RF input of the PA pallet. J1, the 20 pin control connector of the PA pallet, connects vertically to J1 of the interface board. The interface board supplies +50Vdc to the PA pallet via E1, through the hole in the PA pallet circuit board.

Figure 4: Maxiva 10 Watt PA Module Block Diagram (Halves of One PA Module Cascaded)

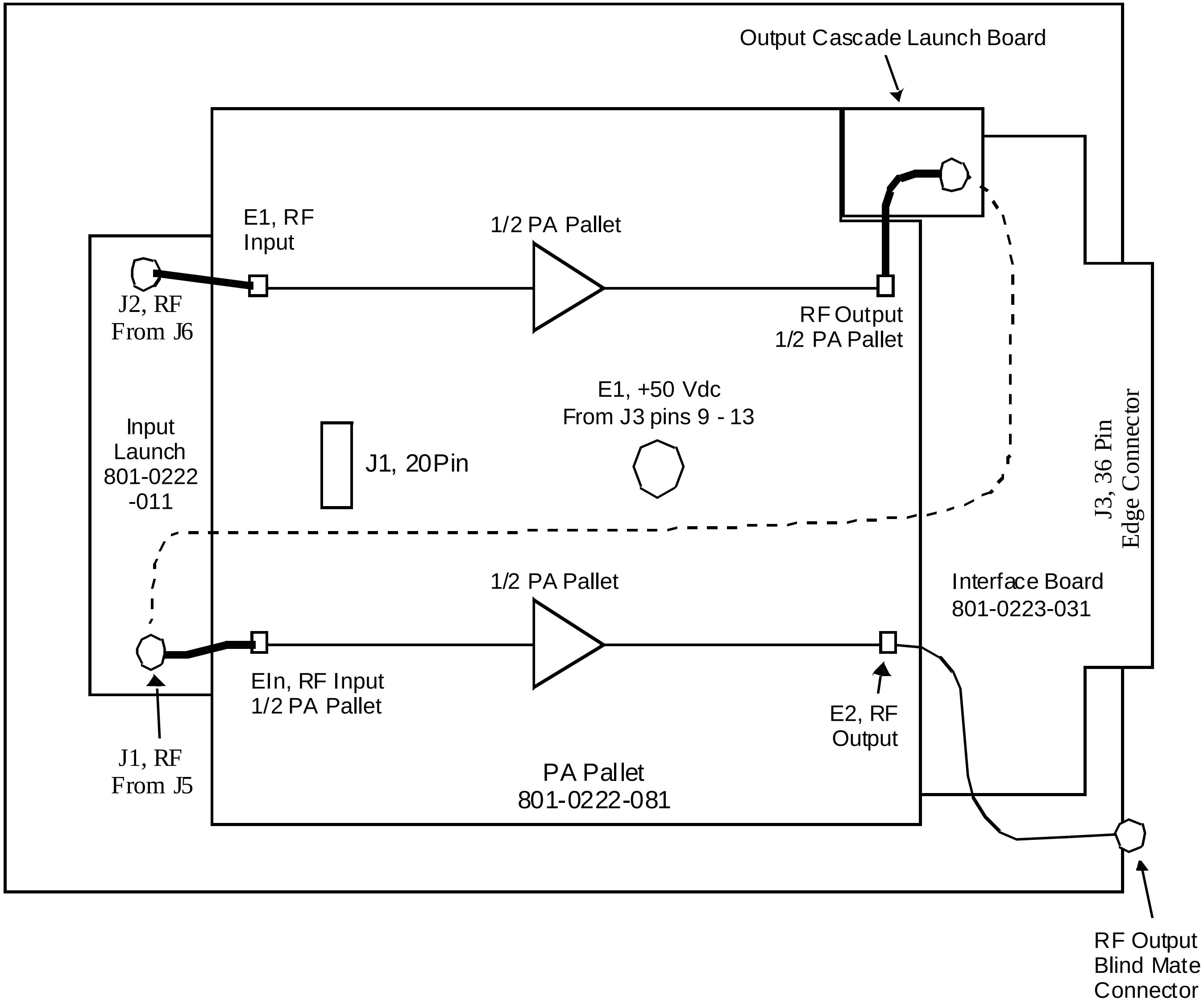
HARRIS



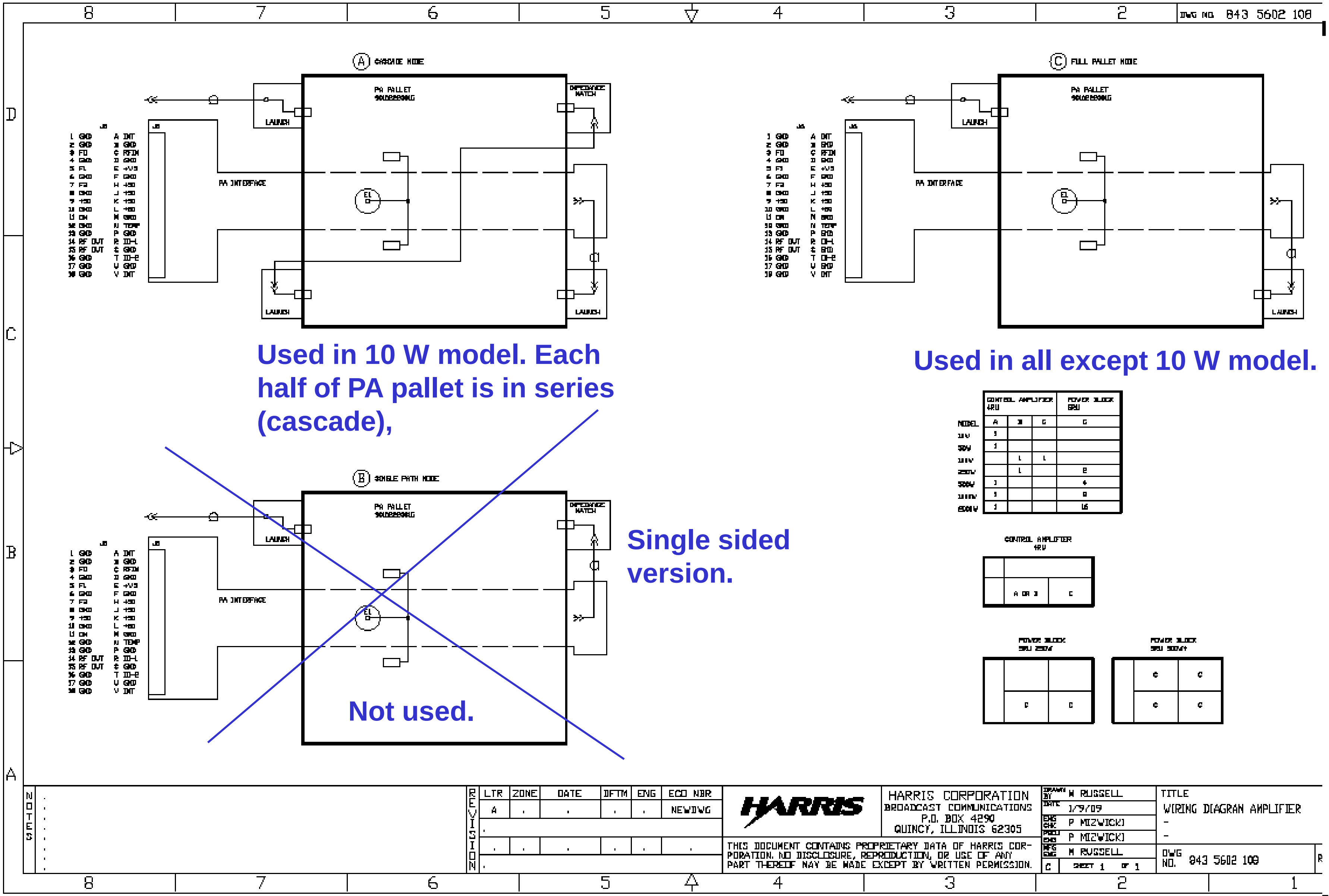
In Figures 4 & 5, the PA module in the 10W Maxiva UAX transmitter consists of a standard PA module with the following changes:

- **The PA pallet input and output hybrids (HY1 and HY2) are removed.**
- **The Output Cascade Launch board is added to the output of the first half of the PA pallet.**
- **Jumpers are added to provide inputs and outputs for each half of the PA Module;**
- **The output of the first half of the pallet is linked to the input of the second half of the PA pallet via interface board connectors J4 and J5.**

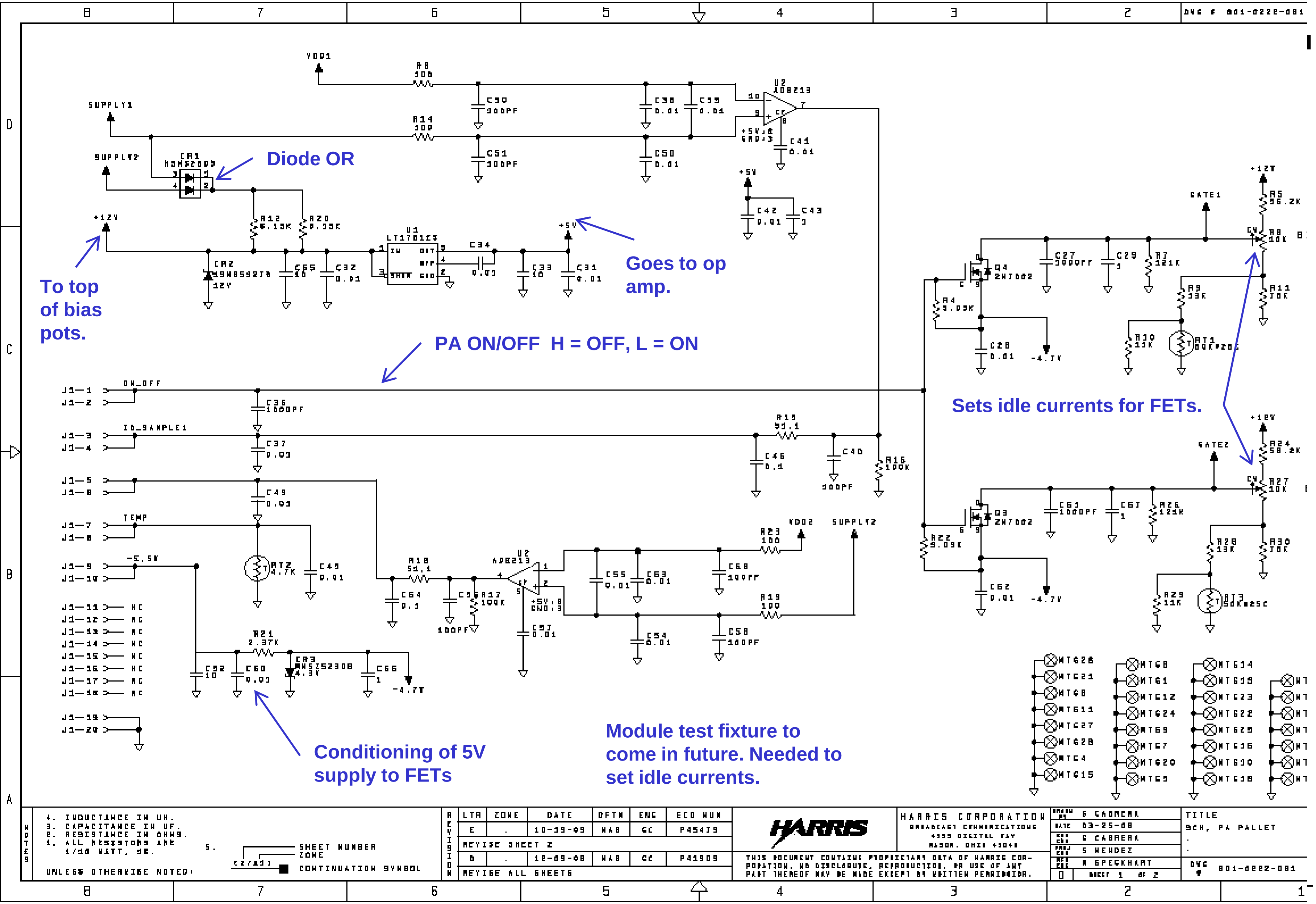
Figure 5: 10 Watt PA Module Showing Input Launch, PA Pallet, and Output Cascade Launch Boards.



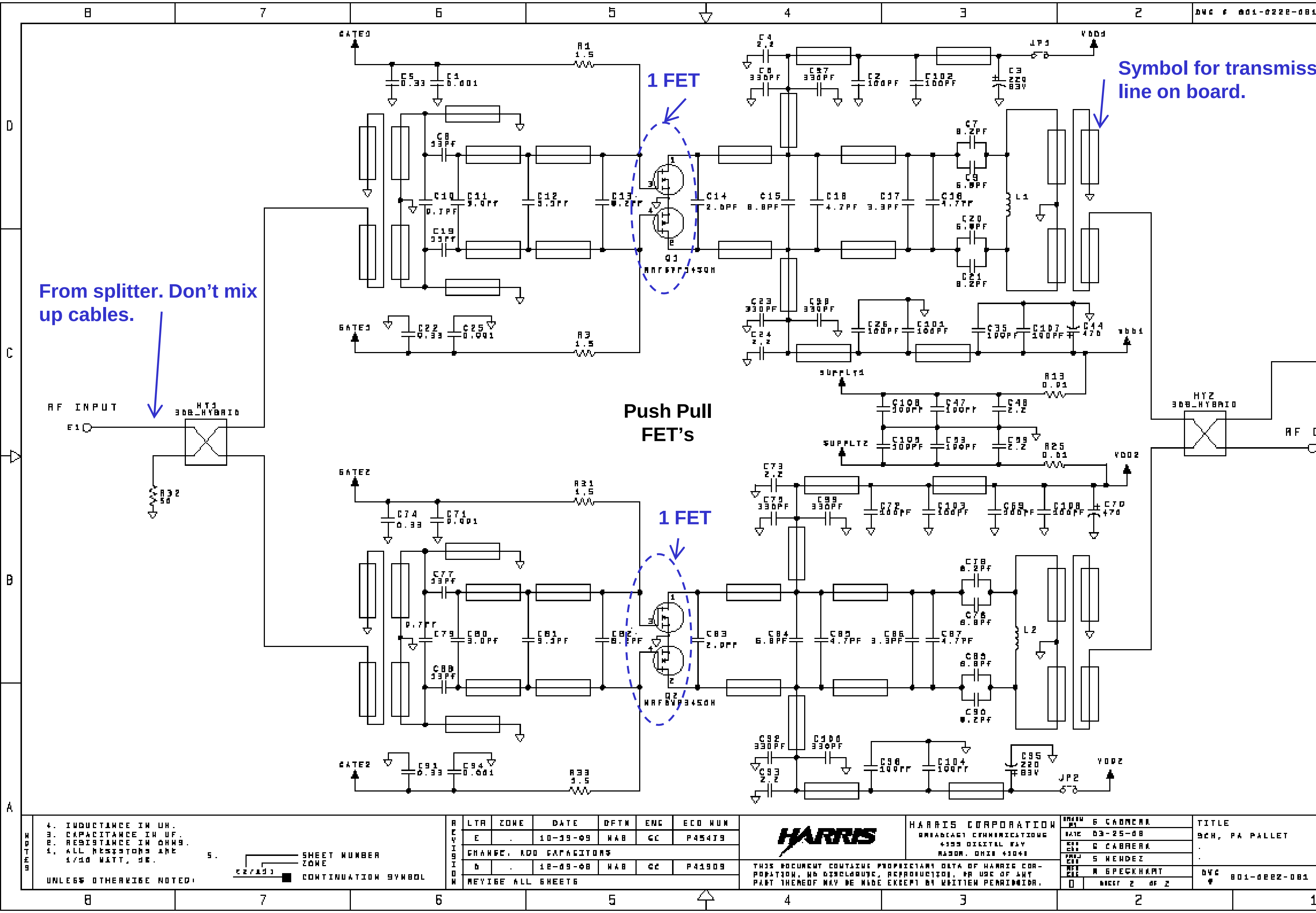
HARRIS


A CASCADE MODE
PA PALLET
LAUNCH
IMPEDANCE MATCH
PA INTERFACE
Used in 10 W model. Each half of PA pallet is in series (cascade),
C FULL PALLET MODE
Used in all except 10 W model.
B SINGLE PATH MODE
Single sided version.
Not used.
CONTROL AMPLIFIER
POWER BLOCK
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
P.O. BOX 4290
QUINCY, ILLINOIS 62305
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TITLE
WIRING DIAGRAM AMPLIFIER
DWG NO. 843 5602 108

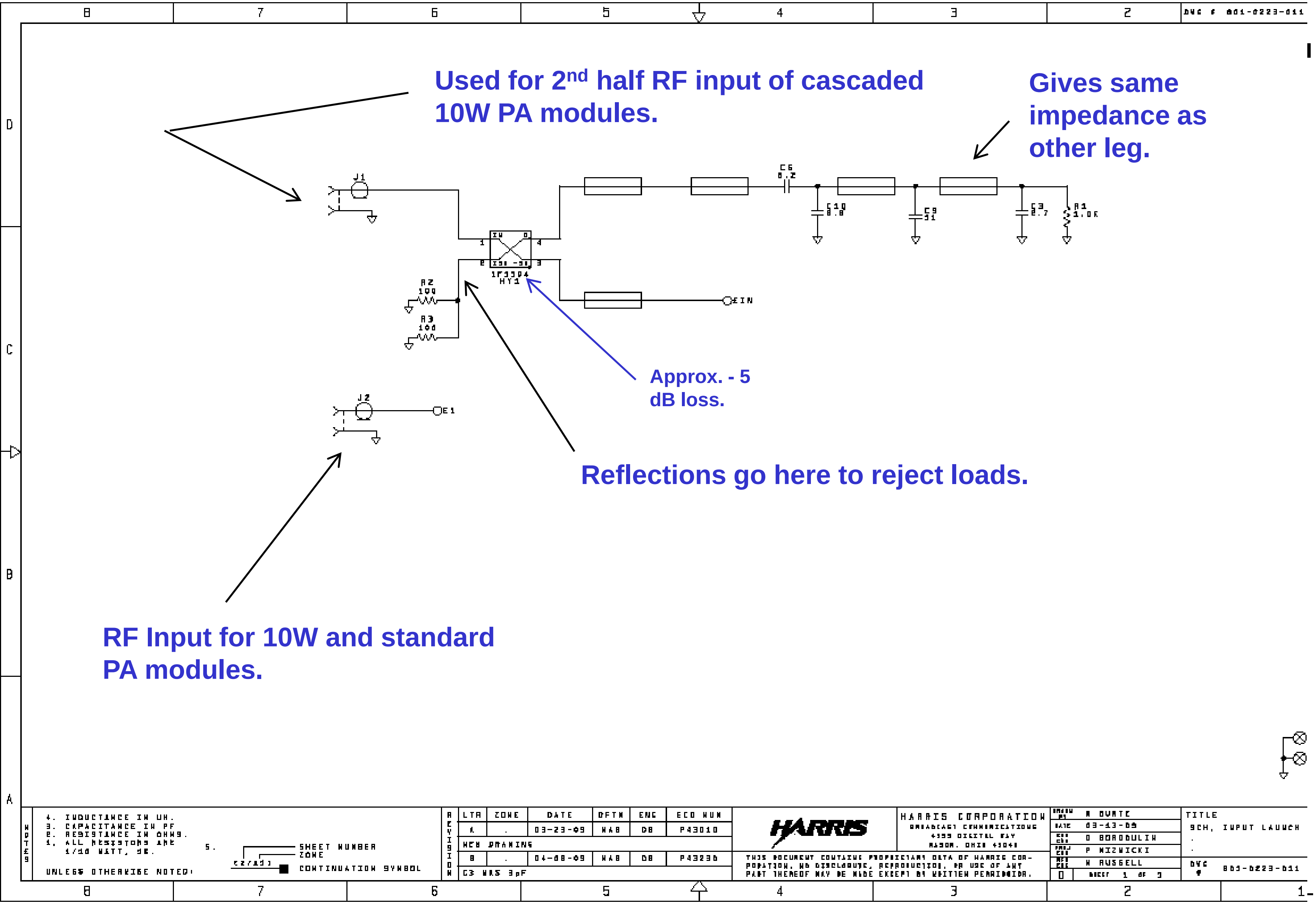
HARRIS



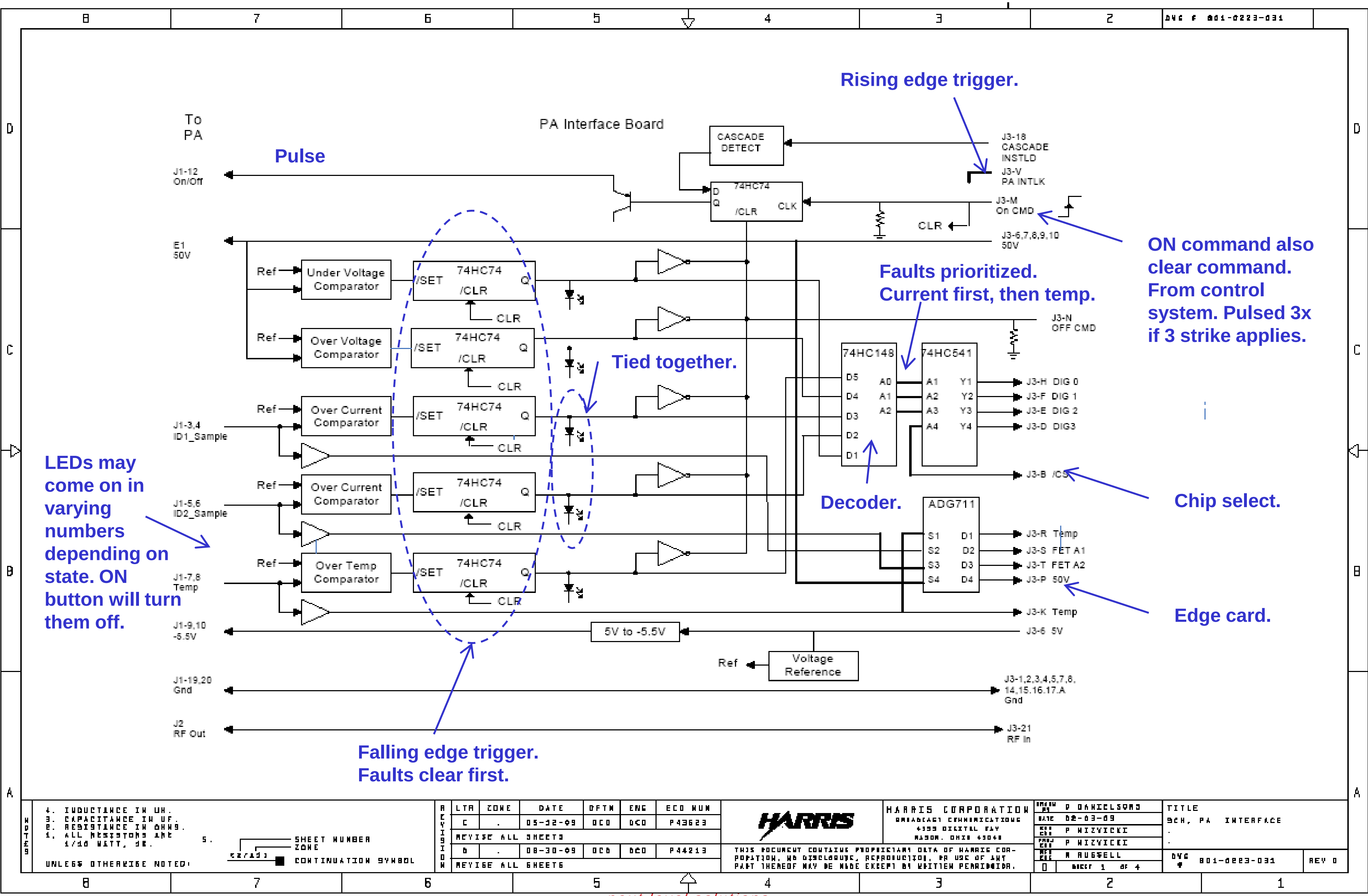
Diode OR
To top of bias pots.
Goes to op amp.
PA ON/OFF H = OFF, L = ON
Sets idle currents for FETs.
Conditioning of 5V supply to FETs
Module test fixture to come in future. Needed to set idle currents.
HARRIS CORPORATION
SCH, PA PALLET
801-0222-081

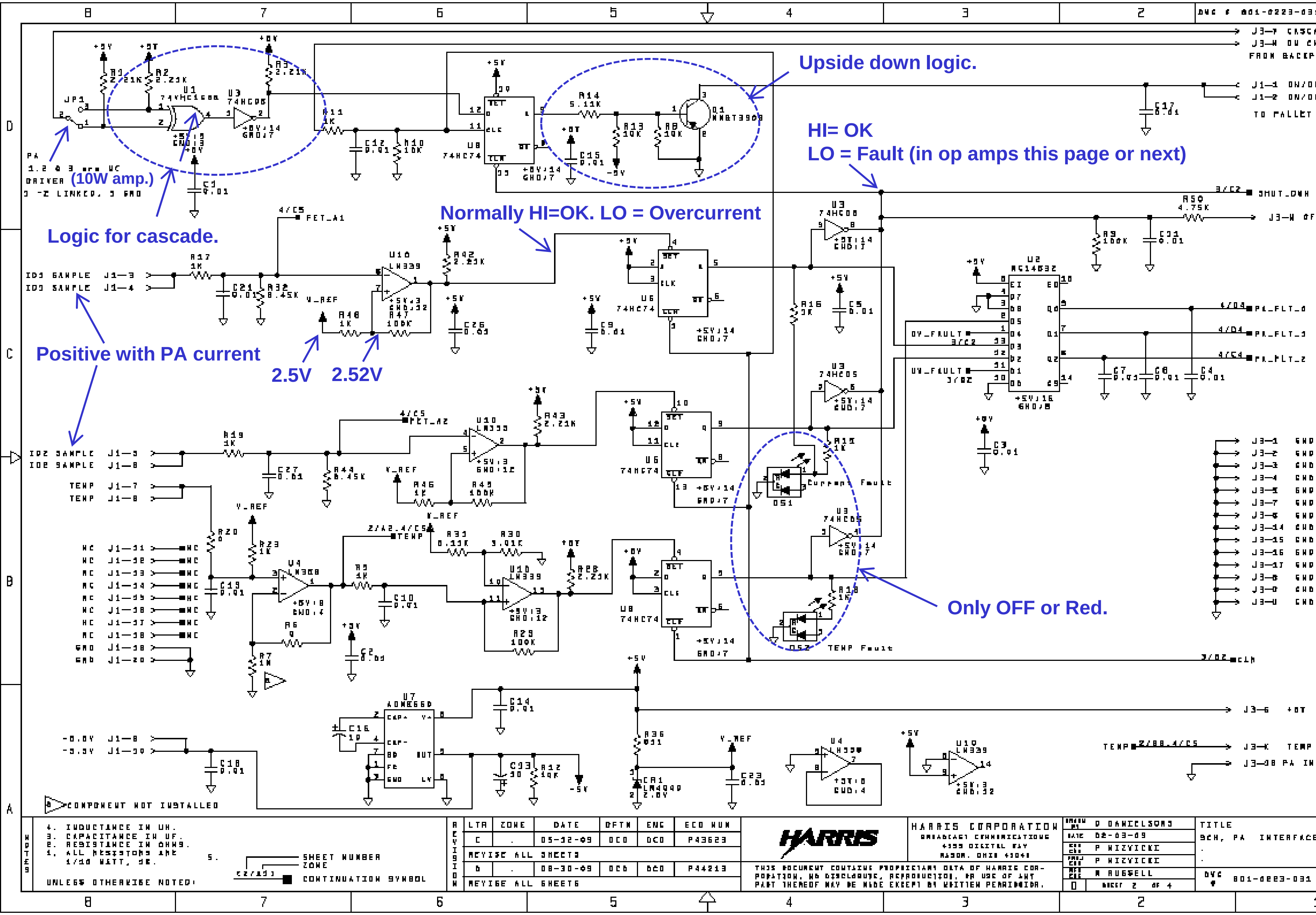


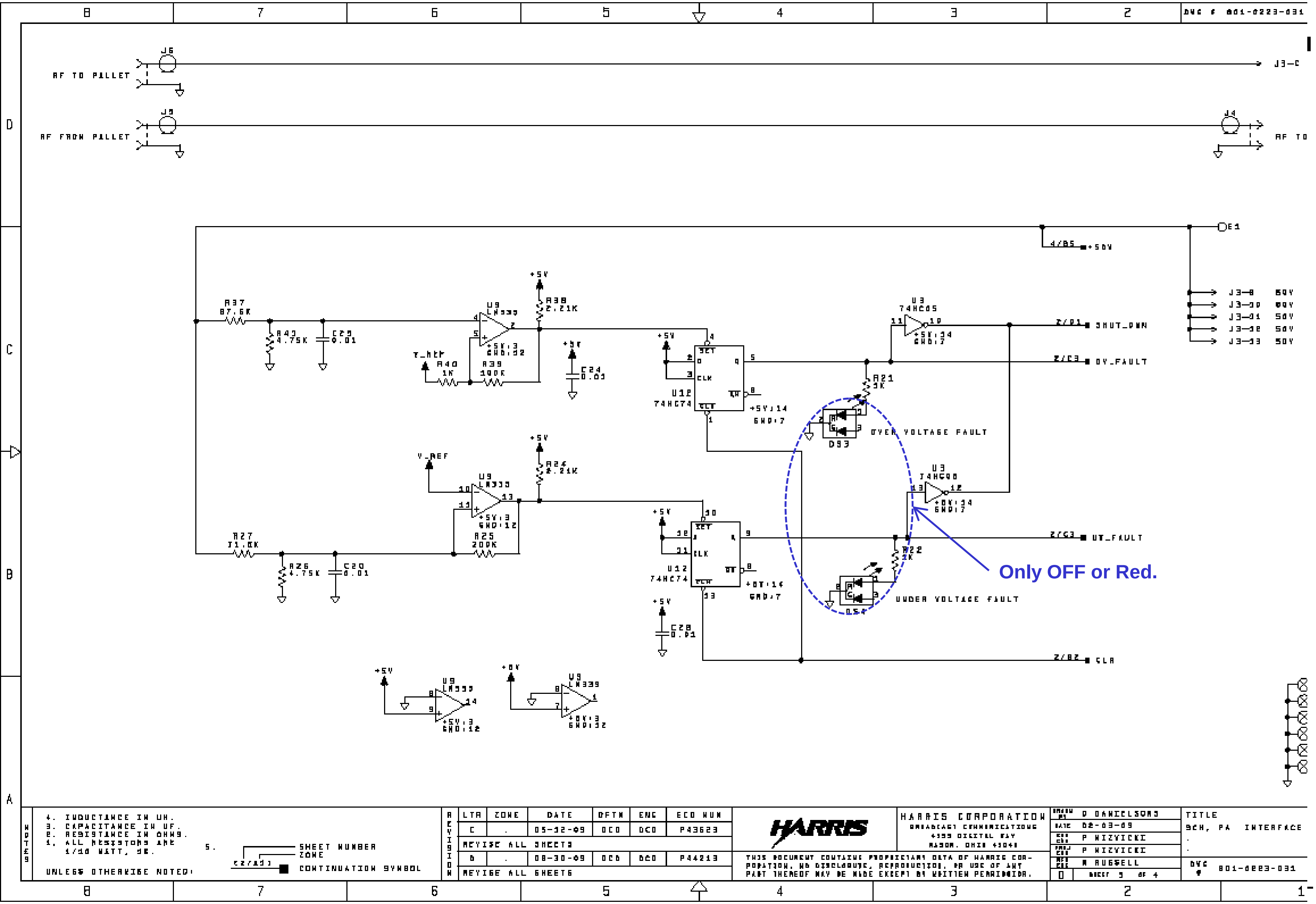
1 FET
Symbol for transmission line on board.
From splitter. Don't mix up cables.
Push Pull FET's
1 FET
RF INPUT
HARRIS CORPORATION
TITLE
SCH, PA PALLET
DWG 801-0222-081

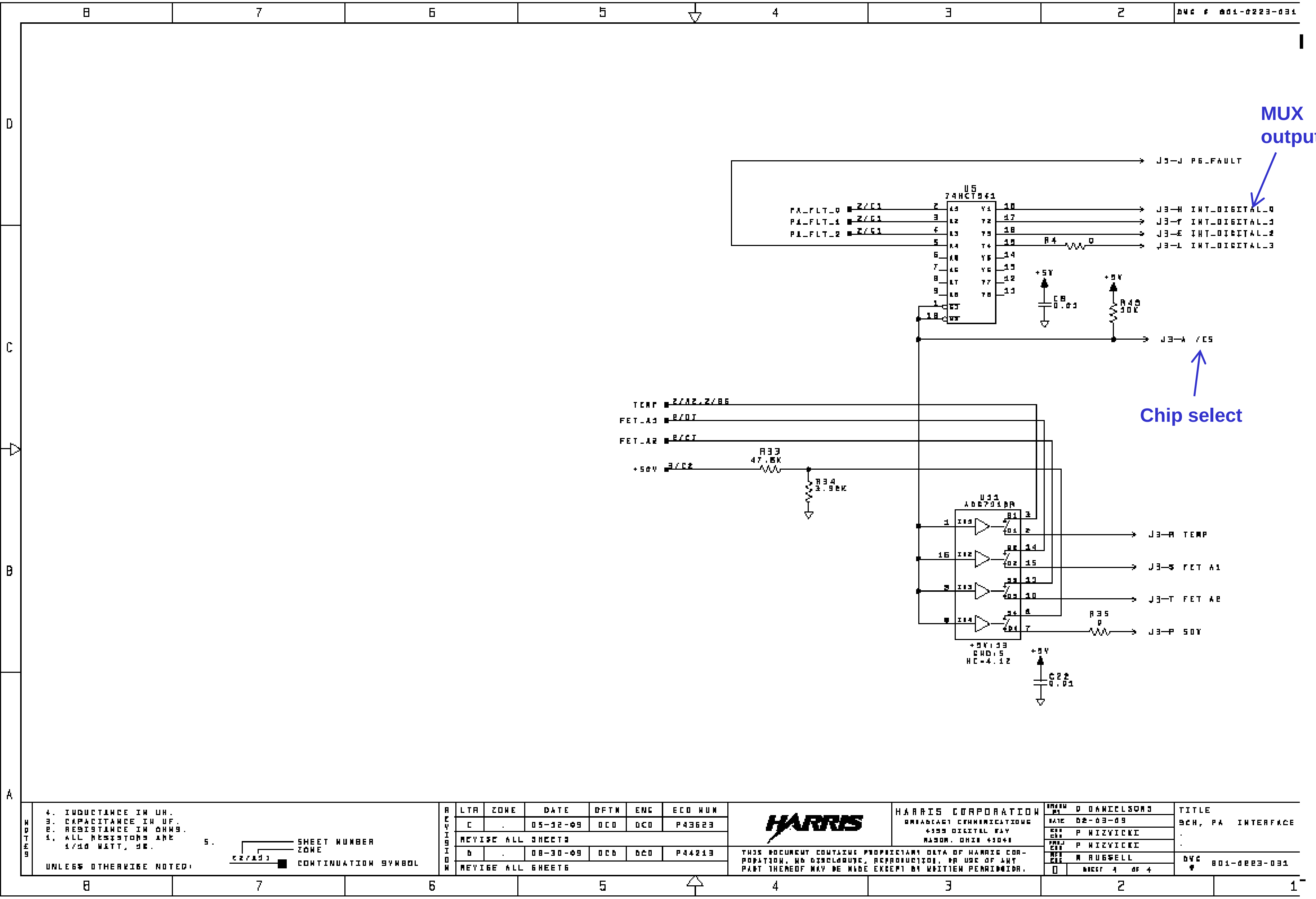

Used for 2nd half RF input of cascaded 10W PA modules.
Gives same impedance as other leg.
Approx. - 5 dB loss.
Reflections go here to reject loads.
RF Input for 10W and standard PA modules.
J1
J2
C6
C10
C9
C3
R1
R2
R3
HY1
E1
HARRIS CORPORATION
TITLE
SCH, INPUT LAUNCH
CONTINUATION SYMBOL
SHEET NUMBER
ZONE
UNLESS OTHERWISE NOTED:

PA Interface 801-0223-031 (1 of 4)

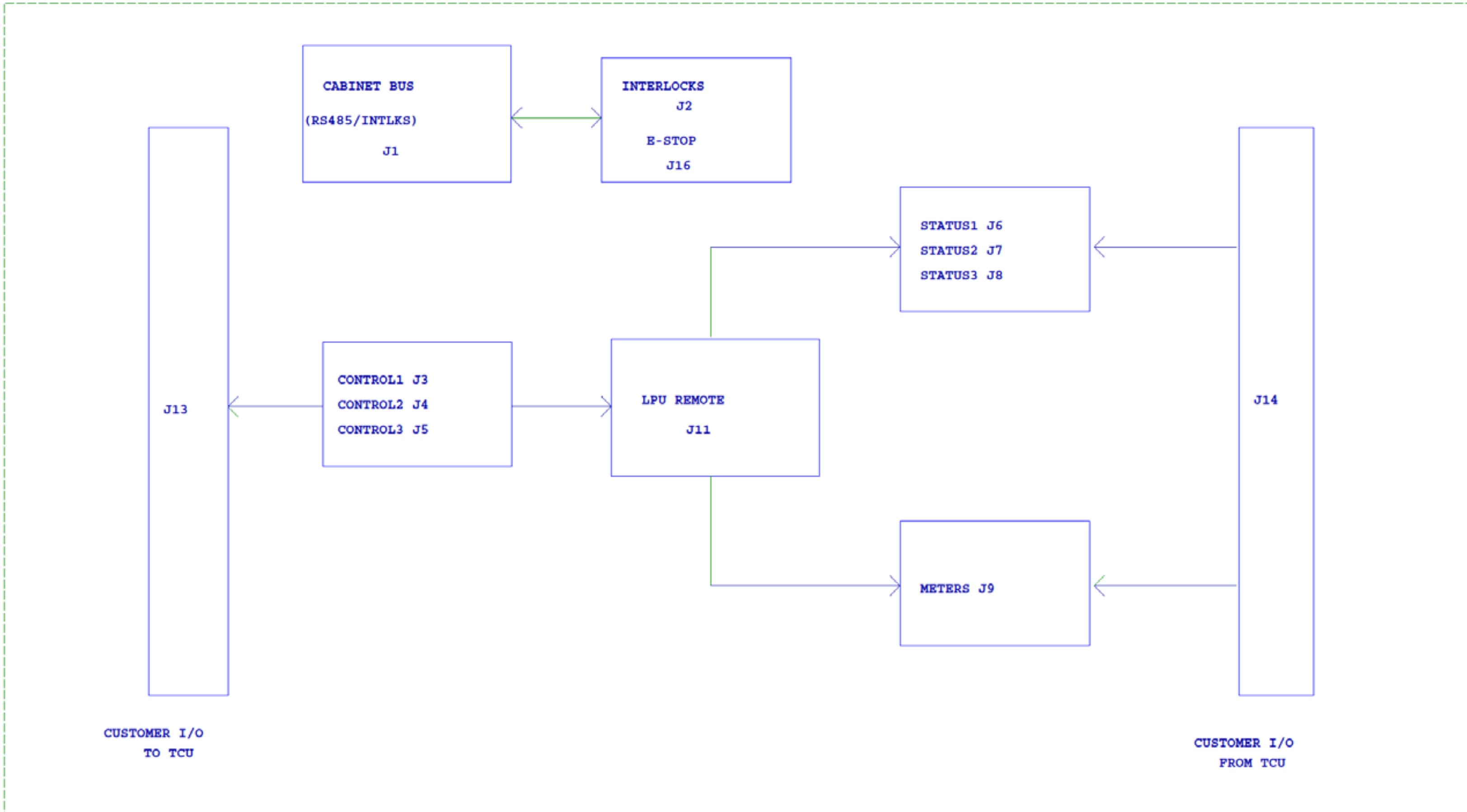



Upside down logic.
HI= OK
LO = Fault (in op amps this page or next)
Normally HI=OK. LO = Overcurrent
Logic for cascade.
(10W amp.)
Positive with PA current
2.5V
2.52V
Only OFF or Red.
Current Fault
TEMP Fault
COMPONENT NOT INSTALLED
HARRIS CORPORATION
TITLE
SCH, PA INTERFACE
801-0223-031


RF TO PALLET
RF FROM PALLET
J6
J5
J4
J3-C
RF TO
E1
+50V
J3-8 50V
J3-10 50V
J3-11 50V
J3-12 50V
J3-13 50V
U3
74HC05
SHUT_DWN
OV_FAULT
UV_FAULT
CLR
U9
LM339
U12
74HC74
R37
87.6K
R43
4.75K
C25
0.01
R38
2.21K
R39
100K
R40
1K
C24
0.01
R21
1K
DS3
OVER VOLTAGE FAULT
V_REF
R24
2.21K
R27
71.5K
R26
4.75K
C20
0.01
R25
200K
R22
1K
DS4
UNDER VOLTAGE FAULT
C28
0.01
+5V
Only OFF or Red.
UNLESS OTHERWISE NOTED:
SHEET NUMBER
ZONE
CONTINUATION SYMBOL
REVISE ALL SHEETS
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
4393 DIGITAL WAY
MASON, OHIO 45040
TITLE
SCH, PA INTERFACE
801-0223-031



MUX output
Chip select
U5
74HCT541
J3-J PS_FAULT
R33
47.5K
TEMP
FET_A1
FET_A2
+50V
HARRIS CORPORATION
801-0223-031



BLOCK DIAGRAM

NOTES

UNLESS OTHERWISE NOTED:

1. ALL RESISTORS ARE 1/2WATT, 1%
2. RESISTANCE IN OHMS.
3. CAPACITANCE IN UF.
4. INDUCTANCE IN UH.
5. (2/A1) — SHEET NUMBER, ZONE, CONTINUATION SYMBOL

REVISION

LTR	ZONE	DATE	DFTM	ENG	ECO NUM
J	.	20 JAN 12	KMN	KMN	P51941
REVISE SHEETS 4 AND 11					
J1	.	03 MAY 12	KMN	KMN	P52830
REVISE SHEET 5					

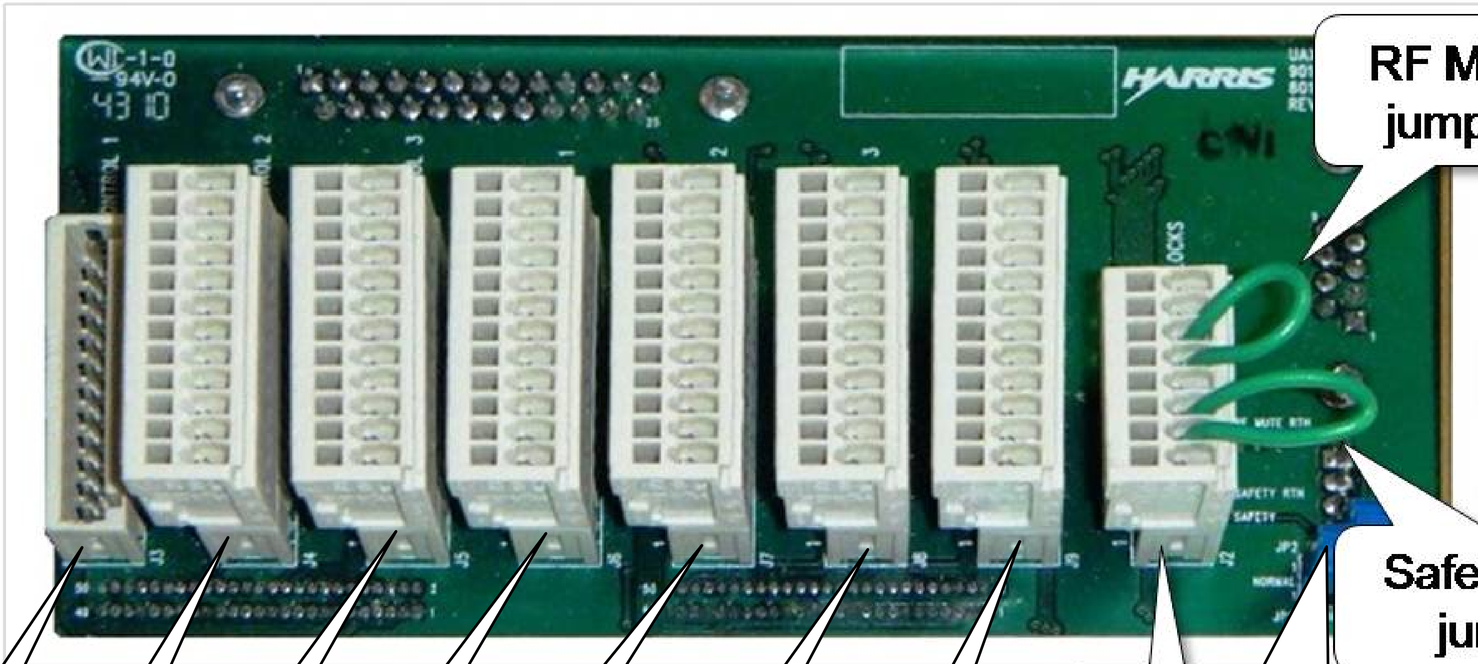
HARRIS

HARRIS CORPORATION
BROADCAST COMMUNICATIONS
4393 DIGITAL WAY
MASON, OHIO 45040

DRAWN BY: C STOTTS
DATE: 10/30/08
ENG CHK: D SPARANO
PROJ ENG: C STOTTS
MFG ENG: S CORNWELL
D SHEET 1 OF 11

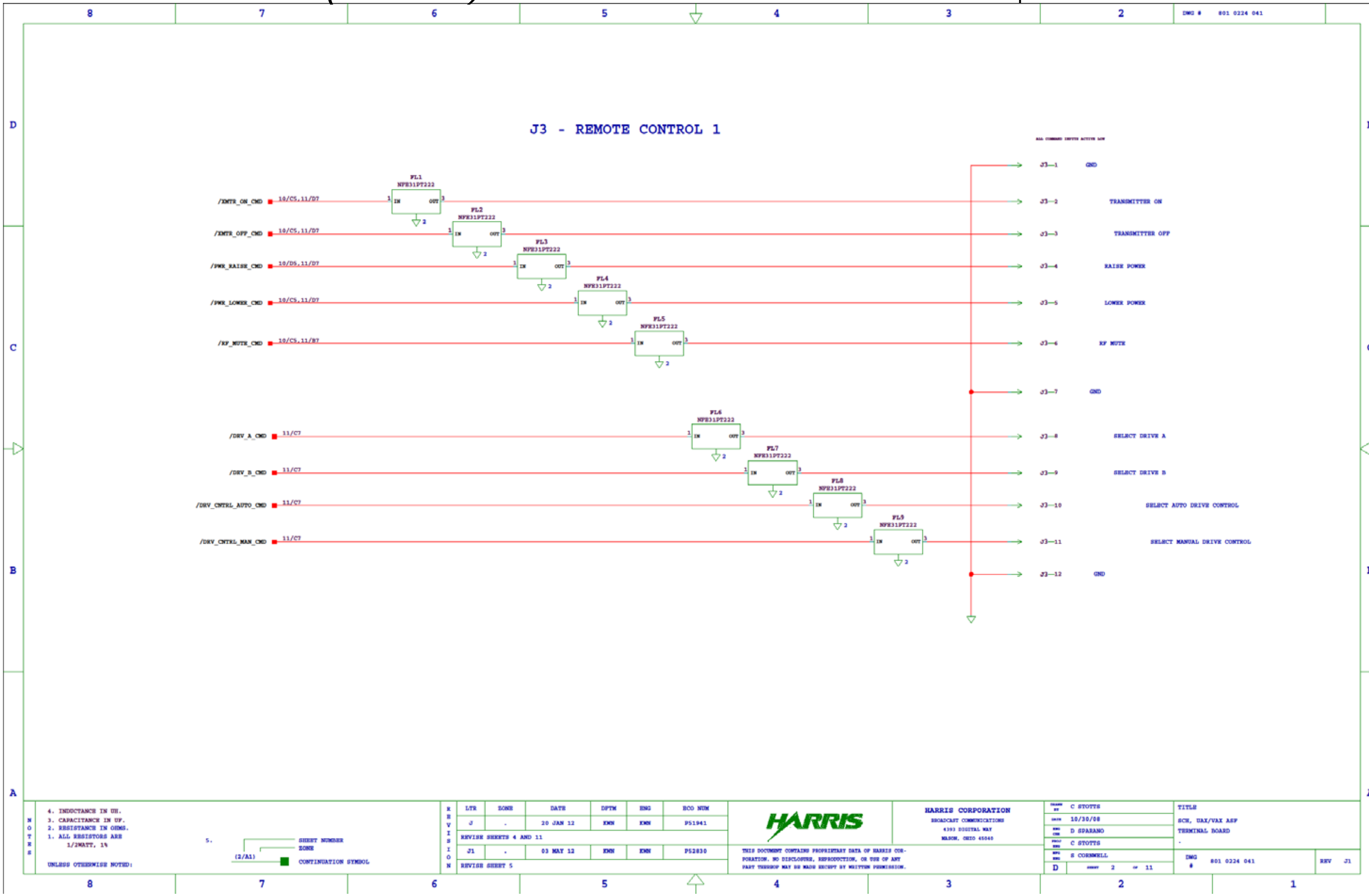
TITLE: SCH, UAX/VAX ASF TERMINAL BOARD
DWG # 801 0224 041
REV J1

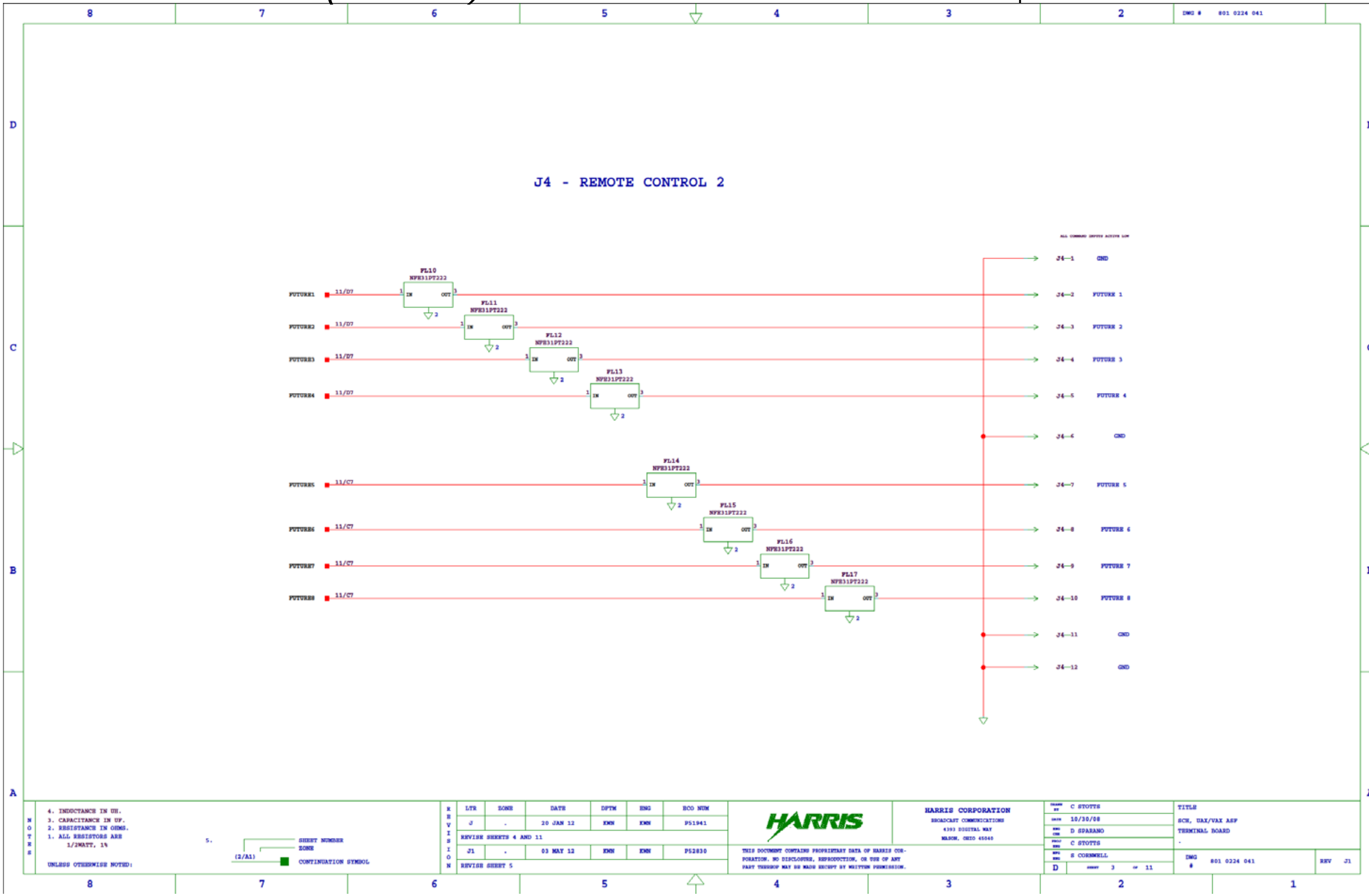
ASF Terminal Board

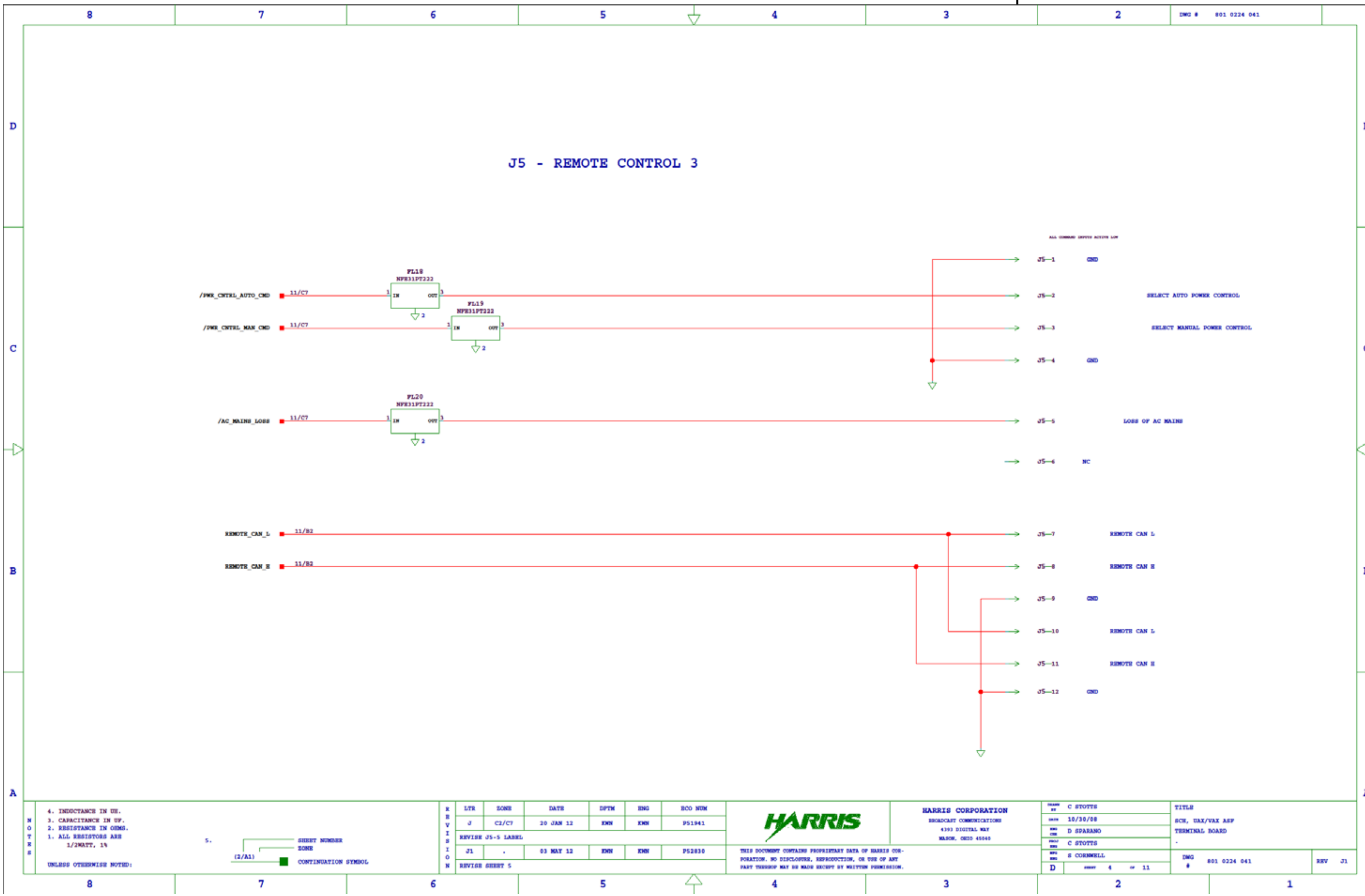


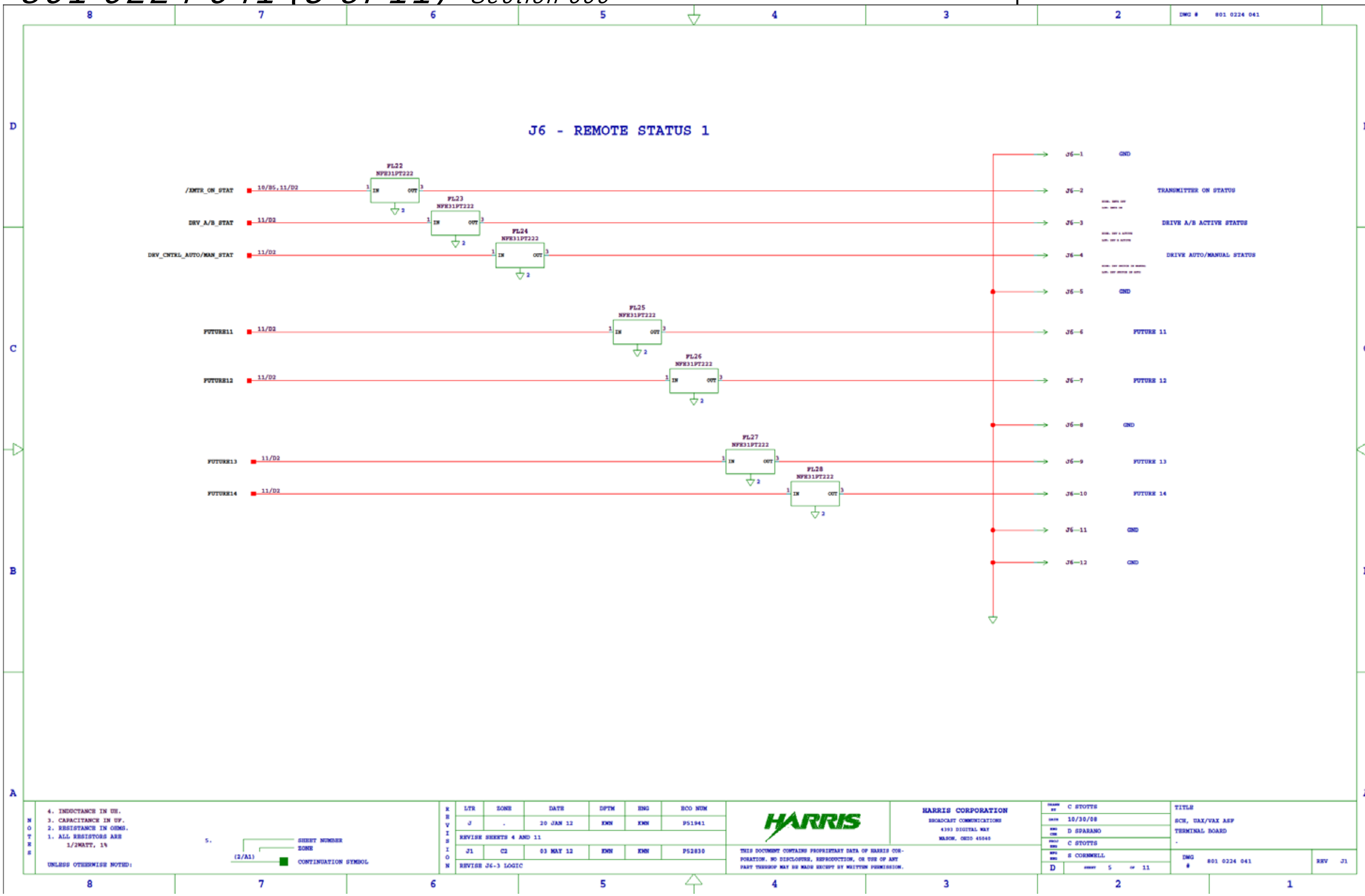
JP2 - Normal for no rear Estop button

JP1 - Normal for no front Estop button

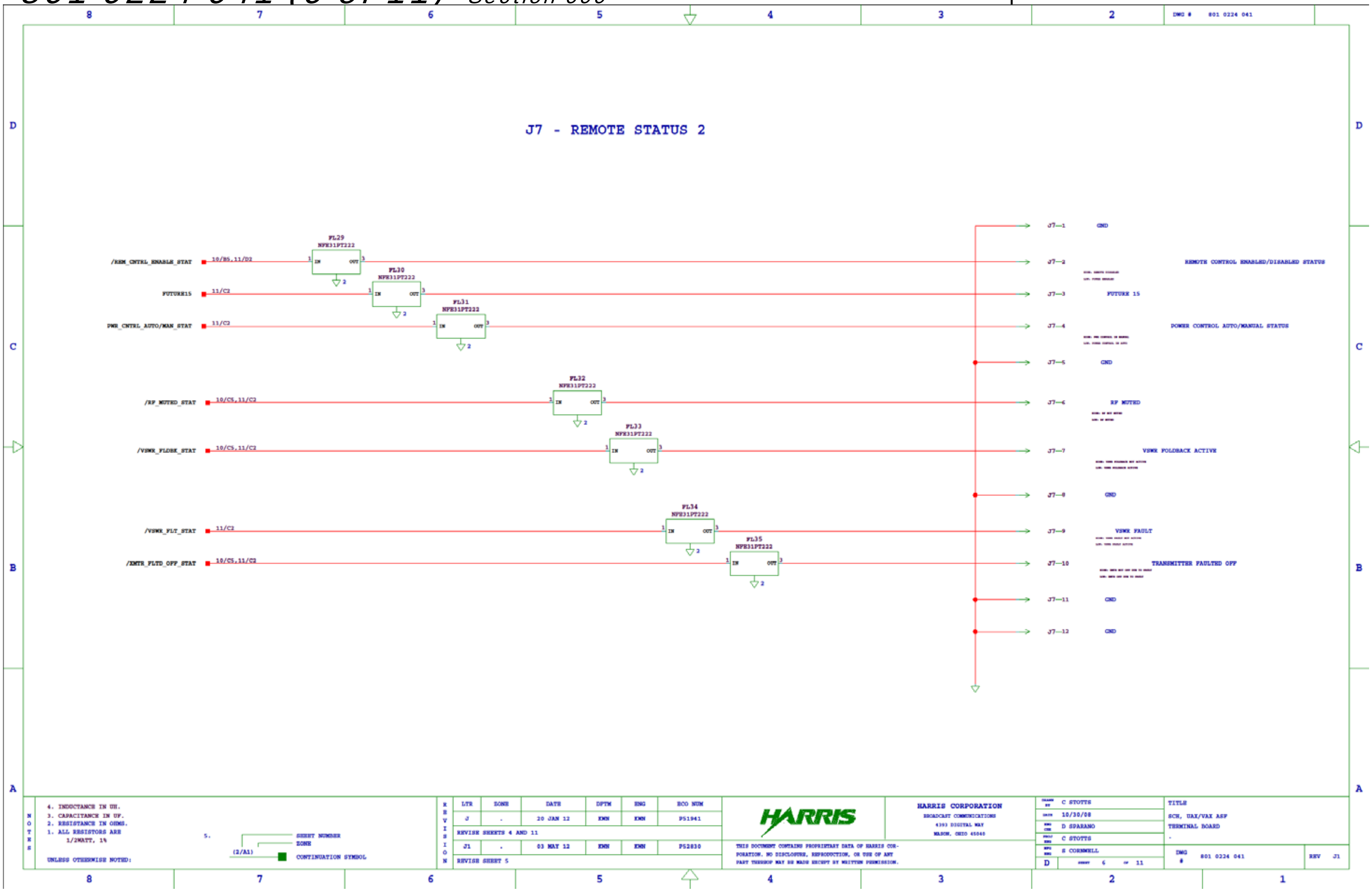

J3 - REMOTE CONTROL 1
/XMTR_ON_CMD
/XMTR_OFF_CMD
/PWR_RAISE_CMD
/PWR_LOWER_CMD
/RF_MUTE_CMD
/DRV_A_CMD
/DRV_B_CMD
/DRV_CNTRL_AUTO_CMD
/DRV_CNTRL_MAN_CMD
GND
TRANSMITTER ON
TRANSMITTER OFF
RAISE POWER
LOWER POWER
RF MUTE
SELECT DRIVE A
SELECT DRIVE B
SELECT AUTO DRIVE CONTROL
SELECT MANUAL DRIVE CONTROL
HARRIS CORPORATION
SCH, UAX/VAX ASF TERMINAL BOARD
801 0224 041

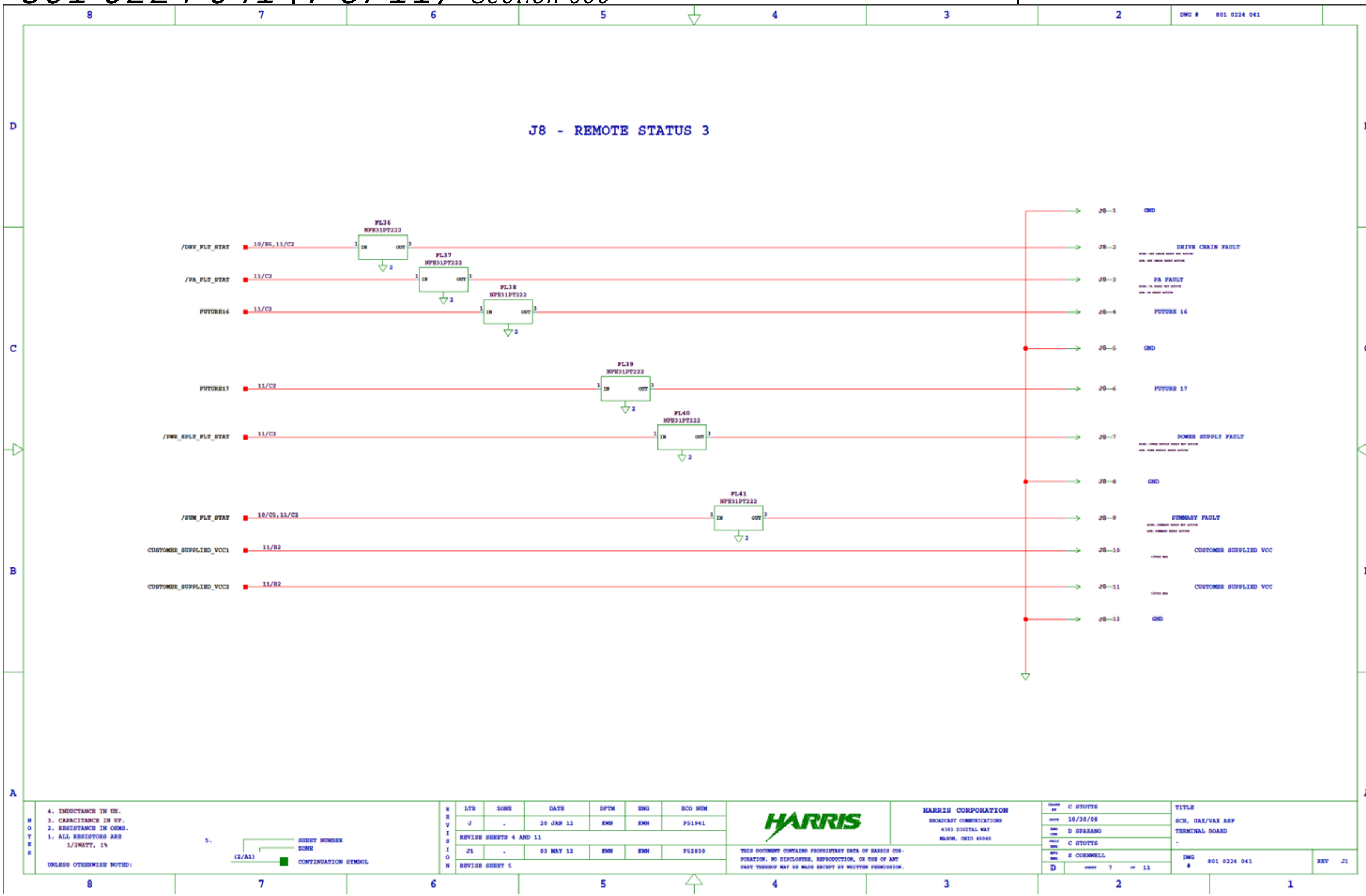

J4 - REMOTE CONTROL 2
FUTURE1
FUTURE2
FUTURE3
FUTURE4
FUTURE5
FUTURE6
FUTURE7
FUTURE8
J4-1 GND
J4-2 FUTURE 1
J4-3 FUTURE 2
J4-4 FUTURE 3
J4-5 FUTURE 4
J4-6 GND
J4-7 FUTURE 5
J4-8 FUTURE 6
J4-9 FUTURE 7
J4-10 FUTURE 8
J4-11 GND
J4-12 GND
HARRIS CORPORATION
SCH, UAX/VAX ASF TERMINAL BOARD
801 0224 041

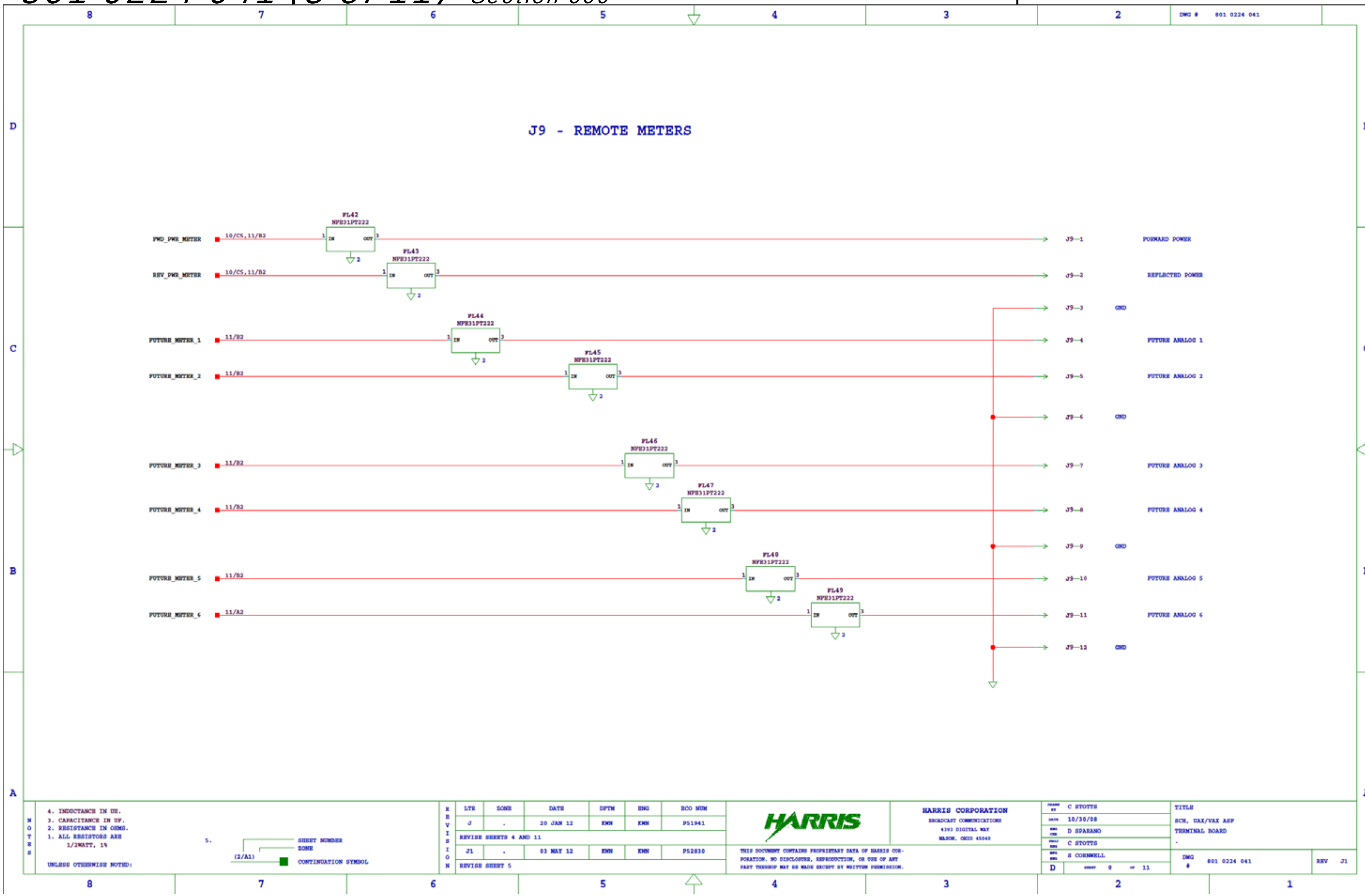

J5 - REMOTE CONTROL 3
FL18
NFE31PT222
FL19
NFE31PT222
FL20
NFE31PT222
/PWR_CNTRL_AUTO_CMD
/PWR_CNTRL_MAN_CMD
/AC_MAINS_LOSS
REMOTE_CAN_L
REMOTE_CAN_H
11/C7
11/B2
J5-1 GND
J5-2 SELECT AUTO POWER CONTROL
J5-3 SELECT MANUAL POWER CONTROL
J5-4 GND
J5-5 LOSS OF AC MAINS
J5-6 NC
J5-7 REMOTE CAN L
J5-8 REMOTE CAN H
J5-9 GND
J5-10 REMOTE CAN L
J5-11 REMOTE CAN H
J5-12 GND
HARRIS CORPORATION
SCH, UAX/VAX ASF
TERMINAL BOARD
801 0224 041

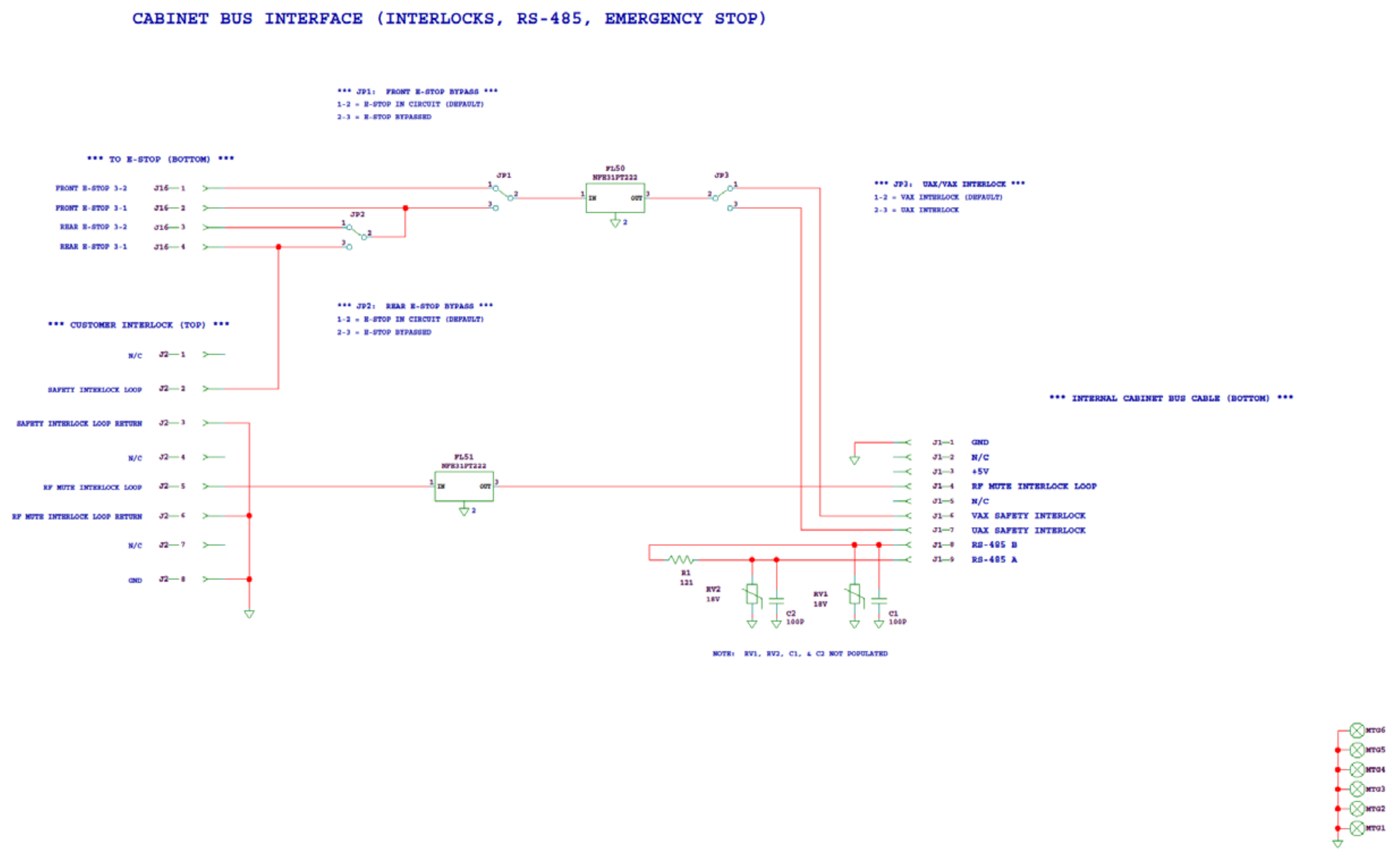


J6 - REMOTE STATUS 1
/XMTR_ON_STAT
DRV_A/B_STAT
DRV_CNTRL_AUTO/MAN_STAT
FUTURE11
FUTURE12
FUTURE13
FUTURE14
FL22
FL23
FL24
FL25
FL26
FL27
FL28
NFE31PT222
IN
OUT
J6-1
J6-2
J6-3
J6-4
J6-5
J6-6
J6-7
J6-8
J6-9
J6-10
J6-11
J6-12
GND
TRANSMITTER ON STATUS
DRIVE A/B ACTIVE STATUS
DRIVE AUTO/MANUAL STATUS
FUTURE 11
FUTURE 12
FUTURE 13
FUTURE 14
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
4393 DIGITAL WAY
MASON, OHIO 45040
SCH, UAX/VAX ASF
TERMINAL BOARD
801 0224 041
REVISE SHEETS 4 AND 11
REVISE J6-3 LOGIC
20 JAN 12
03 MAY 12
C STOTTS
10/30/08
D SPARANO
S CORNWELL
UNLESS OTHERWISE NOTED:
1. ALL RESISTORS ARE 1/2WATT, 1%
2. RESISTANCE IN OHMS.
3. CAPACITANCE IN UF.
4. INDUCTANCE IN UH.
CONTINUATION SYMBOL


J7 - REMOTE STATUS 2
/REM_CNTRL_ENABLE_STAT
FUTURE15
PWR_CNTRL_AUTO/MAN_STAT
/RF_MUTED_STAT
/VSWR_FLDBK_STAT
/VSWR_FLT_STAT
/XMTR_FLTD_OFF_STAT
FL29 NFE31PT222
FL30 NFE31PT222
FL31 NFE31PT222
FL32 NFE31PT222
FL33 NFE31PT222
FL34 NFE31PT222
FL35 NFE31PT222
J7-1 GND
J7-2 REMOTE CONTROL ENABLED/DISABLED STATUS
J7-3 FUTURE 15
J7-4 POWER CONTROL AUTO/MANUAL STATUS
J7-5 GND
J7-6 RF MUTED
J7-7 VSWR FOLDBACK ACTIVE
J7-8 GND
J7-9 VSWR FAULT
J7-10 TRANSMITTER FAULTED OFF
J7-11 GND
J7-12 GND
HARRIS CORPORATION
TITLE SCH, UAX/VAX ASF TERMINAL BOARD
DWG # 801 0224 041
REV J1


J8 - REMOTE STATUS 3
/DRV_FLT_STAT
/PA_FLT_STAT
FUTURE16
FUTURE17
/PWR_SPLY_FLT_STAT
/SUM_FLT_STAT
CUSTOMER_SUPPLIED_VCC1
CUSTOMER_SUPPLIED_VCC2
FL36 NFE31PT222
FL37 NFE31PT222
FL38 NFE31PT222
FL39 NFE31PT222
FL40 NFE31PT222
FL41 NFE31PT222
GND
DRIVE CHAIN FAULT
PA FAULT
FUTURE 16
FUTURE 17
POWER SUPPLY FAULT
SUMMARY FAULT
CUSTOMER SUPPLIED VCC
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
SCH, UAX/VAX ASF TERMINAL BOARD
801 0224 041
REVISE SHEETS 4 AND 11
REVISE SHEET 5
20 JAN 12
03 MAY 12
C STOTTS
10/30/08
D SPARANO
S CORNWELL
4. INDUCTANCE IN UH.
3. CAPACITANCE IN UF.
2. RESISTANCE IN OHMS.
1. ALL RESISTORS ARE 1/2WATT, 1%
UNLESS OTHERWISE NOTED:
SHEET NUMBER
ZONE
CONTINUATION SYMBOL


J9 - REMOTE METERS
FWD_PWR_METER
REV_PWR_METER
FUTURE_METER_1
FUTURE_METER_2
FUTURE_METER_3
FUTURE_METER_4
FUTURE_METER_5
FUTURE_METER_6
FL42 NFE31PT222
FL43 NFE31PT222
FL44 NFE31PT222
FL45 NFE31PT222
FL46 NFE31PT222
FL47 NFE31PT222
FL48 NFE31PT222
FL49 NFE31PT222
FORWARD POWER
REFLECTED POWER
FUTURE ANALOG 1
FUTURE ANALOG 2
FUTURE ANALOG 3
FUTURE ANALOG 4
FUTURE ANALOG 5
FUTURE ANALOG 6
GND
HARRIS CORPORATION
BROADCAST COMMUNICATIONS
SCH, UAX/VAX ASF TERMINAL BOARD
DWG # 801 0224 041
REV J1



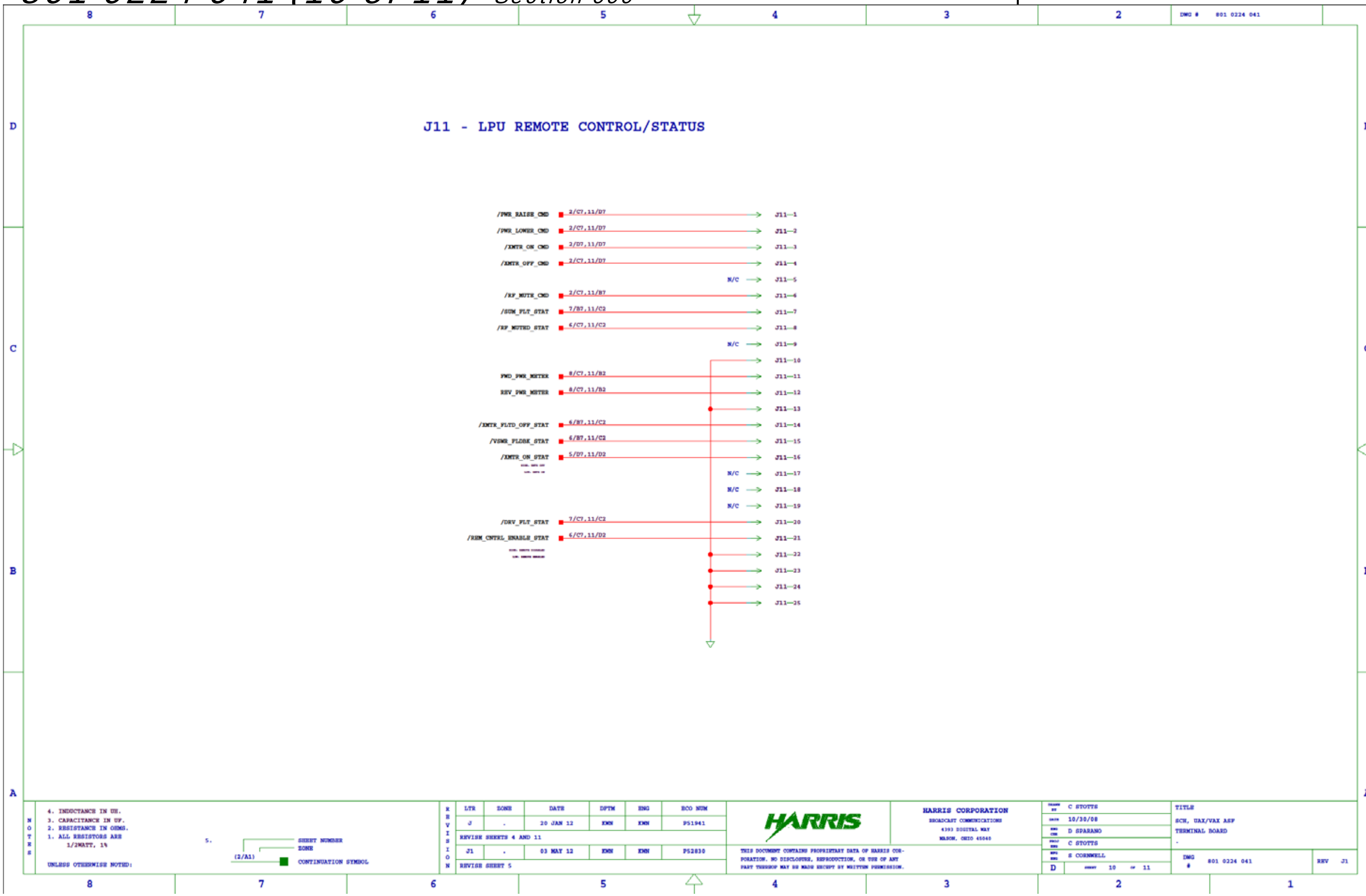
NOTES:
4. INDUCTANCE IN UH.
3. CAPACITANCE IN UF.
2. RESISTANCE IN OHMS.
1. ALL RESISTORS ARE 1/2WATT, 1%
UNLESS OTHERWISE NOTED:

5. SHEET NUMBER / ZONE (2/A1) CONTINUATION SYMBOL

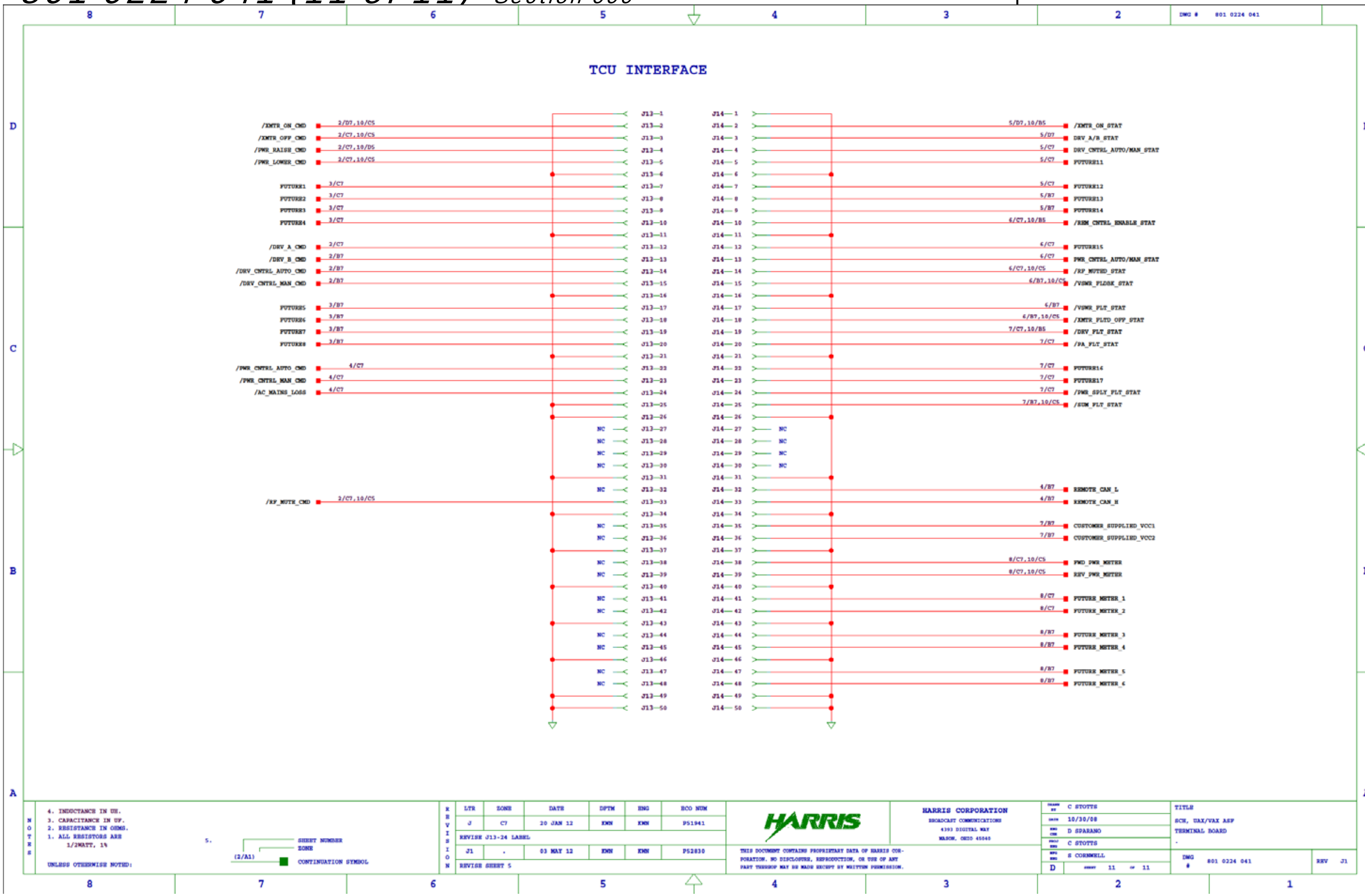
LTR	ZONE	DATE	DFTM	ENG	ECO NUM
J	B3	20 JAN 12	KWN	KWN	P51941
REVISE SHEETS 4 AND 11					
J1	-	03 MAY 12	KWN	KWN	P52830
REVISE SHEET 5					

HARRIS CORPORATION
BROADCAST COMMUNICATIONS
4393 DIGITAL WAY
MASON, OHIO 45040

DRAWN BY C STOTTS; DATE 10/30/08; ENG D SPARANO; CHECK C STOTTS; MFG S CORNWELL
TITLE: SCH, UAX/VAX ASF TERMINAL BOARD
DWG # 801 0224 041 REV J1
SIZE D SHEET 9 OF 11


J11 - LPU REMOTE CONTROL/STATUS
/PWR_RAISE_CMD
/PWR_LOWER_CMD
/XMTR_ON_CMD
/XMTR_OFF_CMD
/RF_MUTE_CMD
/SUM_FLT_STAT
/RF_MUTED_STAT
FWD_PWR_METER
REV_PWR_METER
/XMTR_FLTD_OFF_STAT
/VSWR_FLDBK_STAT
/XMTR_ON_STAT
/DRV_FLT_STAT
/REM_CNTRL_ENABLE_STAT
N/C
HARRIS CORPORATION
SCH, UAX/VAX ASF TERMINAL BOARD
801 0224 041

HARRIS



TCU INTERFACE
4. INDUCTANCE IN UH.
3. CAPACITANCE IN UF.
2. RESISTANCE IN OHMS.
1. ALL RESISTORS ARE 1/2WATT, 1%
UNLESS OTHERWISE NOTED:
SHEET NUMBER
ZONE
CONTINUATION SYMBOL
REVISE J13-24 LABEL
REVISE SHEET 5
HARRIS CORPORATION
SCH, UAX/VAX ASF TERMINAL BOARD
801 0224 041

Cabinet Parallel Remote and Interlock Connections

Control 1 - J3 Top of Cabinet – 12 Pin Female (active low)	
1	GND
2	TRANSMITTER ON
3	TRANSMITTER OFF
4	RAISE POWER
5	LOWER POWER
6	RF MUTE
7	GND
8	SELECT DRIVE A
9	SELECT DRIVE B
10	SELECT AUTO DRIVE CONTROL
11	SELECT MANUAL DRIVE CONTROL
12	GND

Control 3 – J5- 12 Pin Female (active low)	
1	GND
2	SELECT AUTO POWER CONTROL
3	SELECT MANUAL POWER CONTROL
4	GND
5	LOSS OF AC MAINS
6	FUTURE 10
7	REMOTE CAN L
8	REMOTE CAN H
9	GND
10	REMOTE CAN L
11	REMOTE CAN H
12	GND

Control 2 - J4 - 12 Pin Female (active low)	
1	GND
2	FUTURE 1
3	FUTURE 2
4	FUTURE 3
5	FUTURE 4
6	GND
7	FUTURE 5
8	FUTURE 6
9	FUTURE 7
10	FUTURE 8
11	GND
12	GND

Status 1 – J6- 12 Pin Female	
1	
2	TRANSMITTER ON STATUS : High: Transmitter Off Low: Transmitter On
3	DRIVE A/B ACTIVE STATUS : High: Drive A Active Low: Drive B Active
4	DRIVE CONTROL: High: Drive Control in Manual Low: Drive Control in Auto
5	GND
6	FUTURE 11
7	FUTURE 12
8	GND
9	FUTURE 13
10	FUTURE 14
11	GND
12	GND

Status 2 – J7 – 12 Pin Female	
1	GND
2	REMOTE CONTROL ENABLED/DISABLED STATUS
	FUTURE 15
4	POWER CONTROL AUTO/MANUAL STATUS High: Power Control in Manual Low: Power Control in Auto
5	GND
6	RF MUTED High: RF Not Muted Low: RF Muted
7	VSWR FOLDBACK ACTIVE High: VSWR Foldback Not Active Low: VSWR Foldback Active
8	GND
9	VSWR FAULT High: VSWR Fault Not Active Low: VSWR Fault Active
10	TRANSMITTER FAULTED OFF High: XMTR Not Off Due to Fault Low: XMTR Off Due to Fault
11	GND
12	GND

Status 3 – J8 – 12 Pin Female	
1	GND
2	DRIVE CHAIN FAULT High: Drive Chain Fault Not Active Low: Drive Chain Fault Active
3	PA FAULT High: PA Fault Not Active Low: PA Fault Active
4	FUTURE 16
5	GND
6	FUTURE 17
7	POWER SUPPLY FAULT High: PS Fault Not Active Low: PS Fault Active
8	GND
9	SUMMARY FAULT High: Summary Fault Not Active Low: Summary Fault Active
10	CUSTOMER SUPPLIED VCC +30VDC MAX
11	CUSTOMER SUPPLIED VCC +30VDC MAX
12	GND

Meters – J9 – 12 Pin Female	
1	FORWARD POWER
2	REFLECTED POWER
3	GND
4	FUTURE ANALOG 1
5	FUTURE ANALOG 2
6	GND
7	FUTURE ANALOG 3
8	FUTURE ANALOG 4
9	RS485 (+)
10	FUTURE ANALOG 5
11	FUTURE ANALOG 6
12	GND

LPU TX Interface Connector

LPU TX Interface Connector - 25 Pin Male				
	Signal	Direction	Description	Control I/O Assignment
1	/Power Raise	Input	Power Raise Command	I/O Bus 0
2	/Power Lower	Input	Power Lower Command	I/O Bus 1
3	/TX On	Input	Transmitter On Command	I/O Bus 2
4	/TX Off	Input	Transmitter Off Command	I/O Bus 3
5	Remote Control Command	Input	Remote Control Command**	I/O Bus 4
6	/RF Mute Command	Input	RF mute command	Input directly to Signal Processing board
7	/Sum Fault	Output	Summary Fault Status	I/O Bus 5
8	/RF Mute Status	Output	RF Mute Status	I/O Bus 6
9	/UPS Shutdown	Input	Disables battery backup functionality	Input directly to Signal Processing board
10	/EQ Reset	Input	Resets adaptive correction tables to default	I/O Bus 16
11	/EQ Hold	Input	Holds current adaptive correction tables	I/O Bus 7
12	Not Used	Input		Analog Input 0
13	Not Used	Input		Analog Input 1
14	/Exciter Active	Input	Indicates that the exciter is active (Master/Slave Mode for UAX)**	I/O Bus 8
15	/RF Present	Output	Indicates that exciter RF output is valid	I/O Bus 9
16	On/Off Status	Output	Transmitter On/Off Status	I/O Bus 10
17	/Remote Fault Reset	Input	Restrike Command	I/O Bus 11
18	Auto/Manual Command	Input	Auto/Manual Mode Command**	I/O Bus 12
19	/TCU Present	Input	TCU Present Command	I/O Bus 13
20	Exciter/LPU Sum Flt	Output	Exciter/LPU Summary Fault Status	I/O Bus 14
21	Remote Enable\Disable	Output	Remote Control Status	I/O Bus 15
22	GND		Ground	
23	GND		Ground	
24	GND		Ground	
25	GND		Ground	

This connector is on the rear of the LPU. It can be used for remote control and monitoring on standalone transmitters (non racked systems without TCU's).

LPU User Remote Connector

User Remote - 25 Pin Female				
	Signal	Direction	Description	Control I/O Assignment
1	Forward Power	Output	0 – 4.096VDC output representing Forward power level	Analog Output 0
2	Reflected Power	Output	0 – 4.096VDC output representing reflected power level	Analog Output 1
3	Spare Analog In 1	Input		Analog Input 2
4	Spare Analog In 2	Input		Analog Input 3
5	+12Vdc	Output	+12Vdc, 200mA max	
6	GND		Ground	
7	GND		Ground	
8	GND		Ground	
9	GND		Ground	
10	GND		Ground	
11	Alarm 0 Common		Alarm 0 Relay Common	
12	Alarm 0 Normally Closed		Alarm 0 Relay Normally Closed (Faulted) Position	
13	Alarm 0 Normally Open		Alarm 0 Relay Normally Open (Non-Faulted) Position	
14	Alarm 1 Common		Alarm 1 Relay Common	
15	Alarm 1 Normally Closed		Alarm 1 Relay Normally Closed (Faulted) Position	
16	Alarm 1 Normally Open		Alarm 1 Relay Normally Open (Non-Faulted) Position	
17	Alarm 2 Common		Alarm 2 Relay Common	
18	Alarm 2 Normally Closed		Alarm 2 Relay Normally Closed (Faulted) Position	
19	Alarm 2 Normally Open		Alarm 2 Relay Normally Open (Non-Faulted) Position	
20	Alarm 3 Common		Alarm 3 Relay Common	
21	Alarm 3 Normally Closed		Alarm 3 Relay Normally Closed (Faulted) Position	
22	Alarm 3 Normally Open		Alarm 3 Relay Normally Open (Non-Faulted) Position	
23	Alarm 4 Common		Alarm 4 Relay Common	
24	Alarm 4 Normally Closed		Alarm 4 Relay Normally Closed (Faulted) Position	
25	Alarm 4 Normally Open		Alarm 4 Relay Normally Open (Non-Faulted) Position	

This connector is on the rear of the LPU. It can be used for remote control and monitoring on standalone transmitters (non racked systems without TCU's).

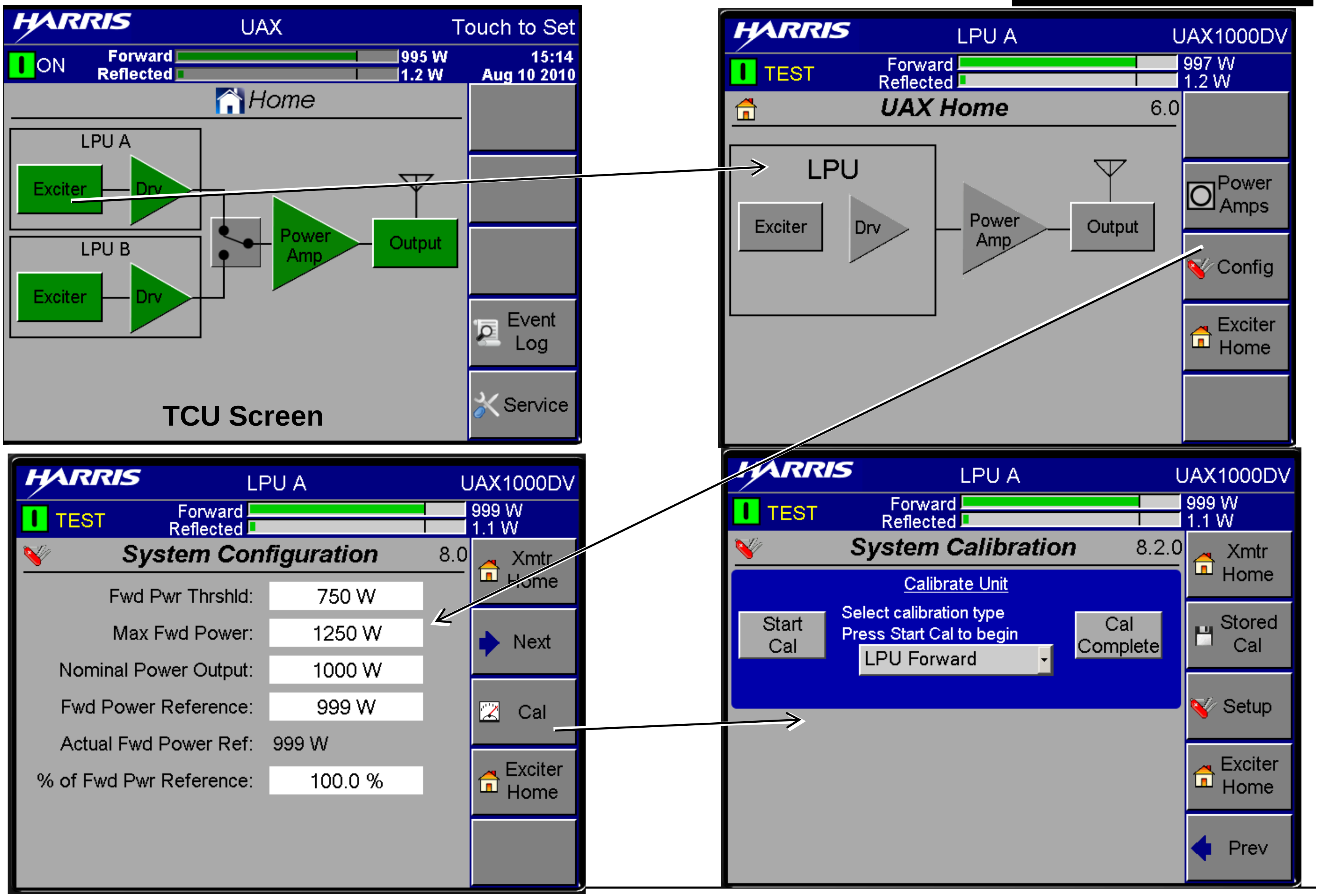
Additional notes:

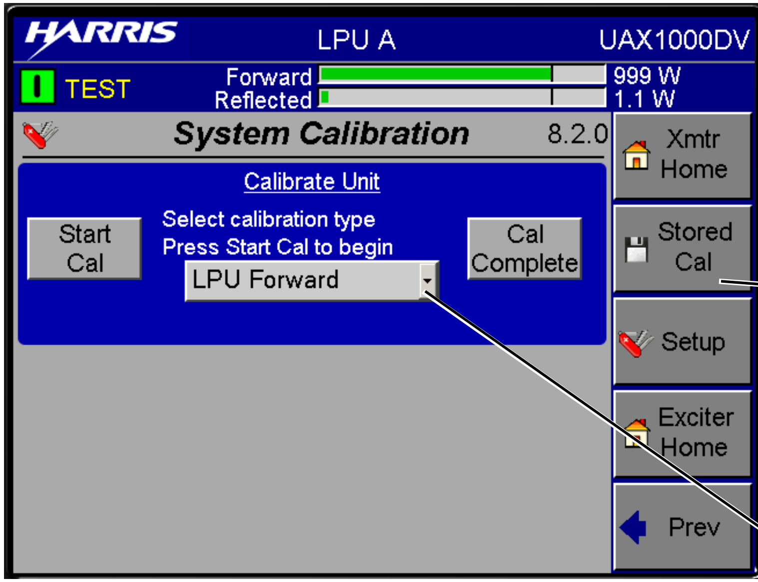
**** The Remote Control, /Exciter Active, and Auto/Manual Commands are ignored when in Standalone operation.**

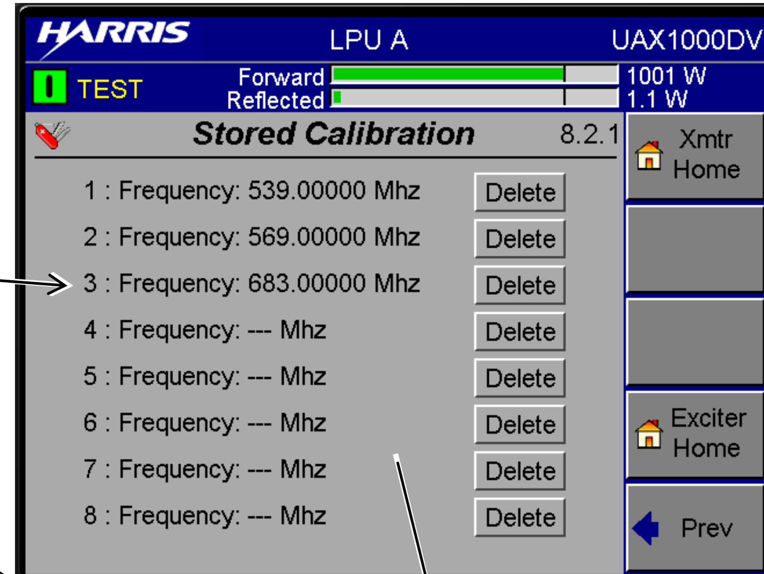
The UAX Transmitter will default to Standalone Mode when no connections are made to the Parallel I/O. If the /TCU Present signal is asserted at anytime, the Transmitter will be forced into Dual Mode for operations with a TCU. The Transmitter will remain in Dual Mode until power cycled with the /TCU Present signal de-asserted.

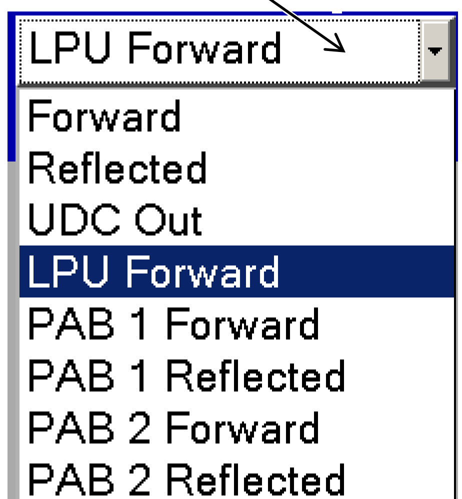
When in Dual Mode, the Parallel I/O will be disabled when of Remote Control is Disabled.

When in Standalone Mode, the Parallel I/O will be disabled when Remote Control is disabled.


HARRIS
UAX
Touch to Set
ON
Forward
Reflected
995 W
1.2 W
15:14
Aug 10 2010
Home
LPU A
Exciter
Drv
LPU B
Exciter
Drv
Power Amp
Output
Event Log
Service
TCU Screen
LPU A
UAX1000DV
TEST
997 W
1.2 W
UAX Home
6.0
LPU
Exciter
Drv
Power Amp
Output
Power Amps
Config
Exciter Home
System Configuration
8.0
999 W
1.1 W
Fwd Pwr Thrshld: 750 W
Max Fwd Power: 1250 W
Nominal Power Output: 1000 W
Fwd Power Reference: 999 W
Actual Fwd Power Ref: 999 W
% of Fwd Pwr Reference: 100.0 %
Xmtr Home
Next
Cal
Exciter Home
System Calibration
8.2.0
Calibrate Unit
Start Cal
Select calibration type
Press Start Cal to begin
LPU Forward
Cal Complete
Xmtr Home
Stored Cal
Setup
Exciter Home
Prev





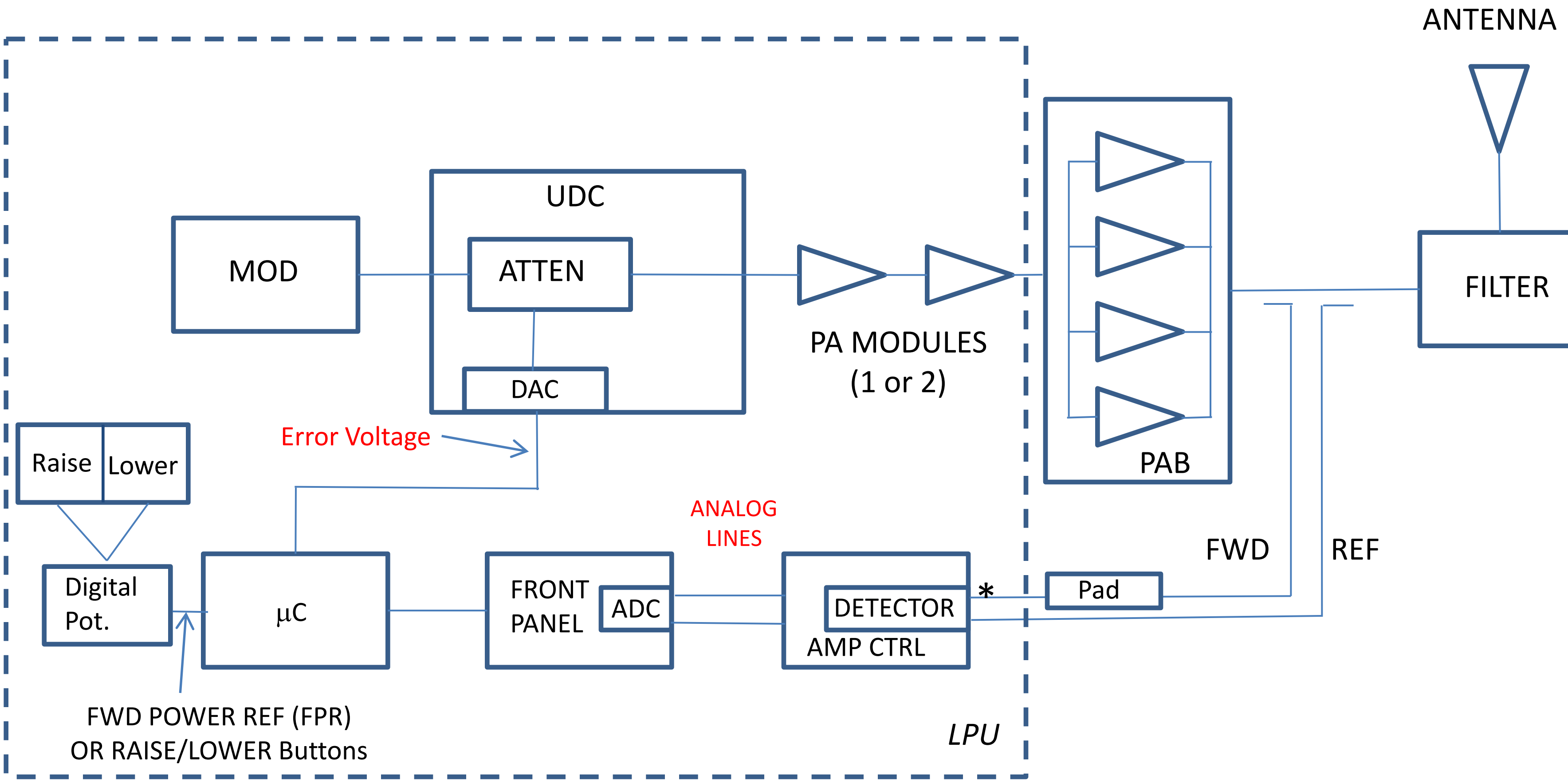


The multiple calibrations are used in N+1 applications.

Forward and Reflected are the only required calibrations.

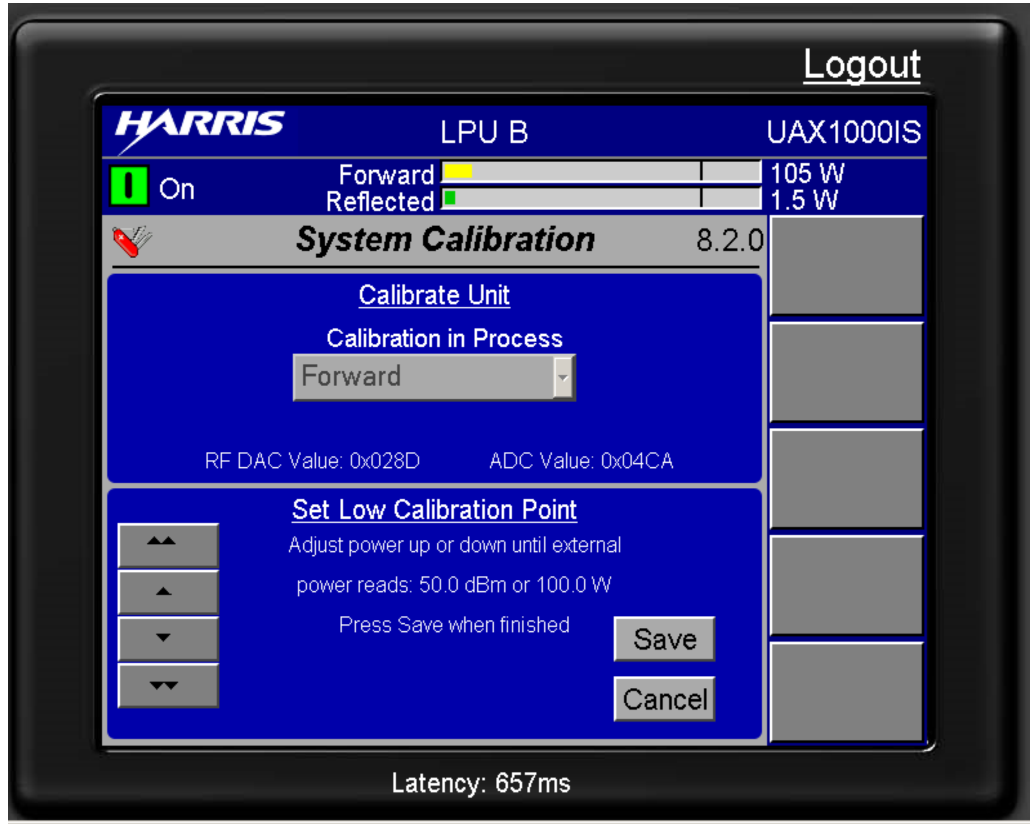
LPU Forward and PAB # forward and reflected require use of quantified couplers, connectors and cables of adequate power rating (>500W).

UAX ALC Control



- * 0 dBm at this point during power cal when at model number power +1 dB. Use pads as needed.
- μC (micro) compares FPR to current power level then raises or lowers UDC attenuator
- Power increases are done in 50% increments (1 per sec.) until current power is within a few watts of Forward Power Reference value then stops.
- RF ATTEN DAC value found on teraterm p6 of 7. Values > 500 indicate a problem.
- Power increase should be evident at DAC level >200.
- DAC level is controlled directly in MANUAL mode of operation.
- Pallet currents > 7amps not desirable.

Hexadecimal used to represent binary coded vaules.



16^3 16^2 16 0-15 1/16 $1/16^2$

028D.00 $= (0x16^3)+(2x16^2)+(8x16)+(13)$

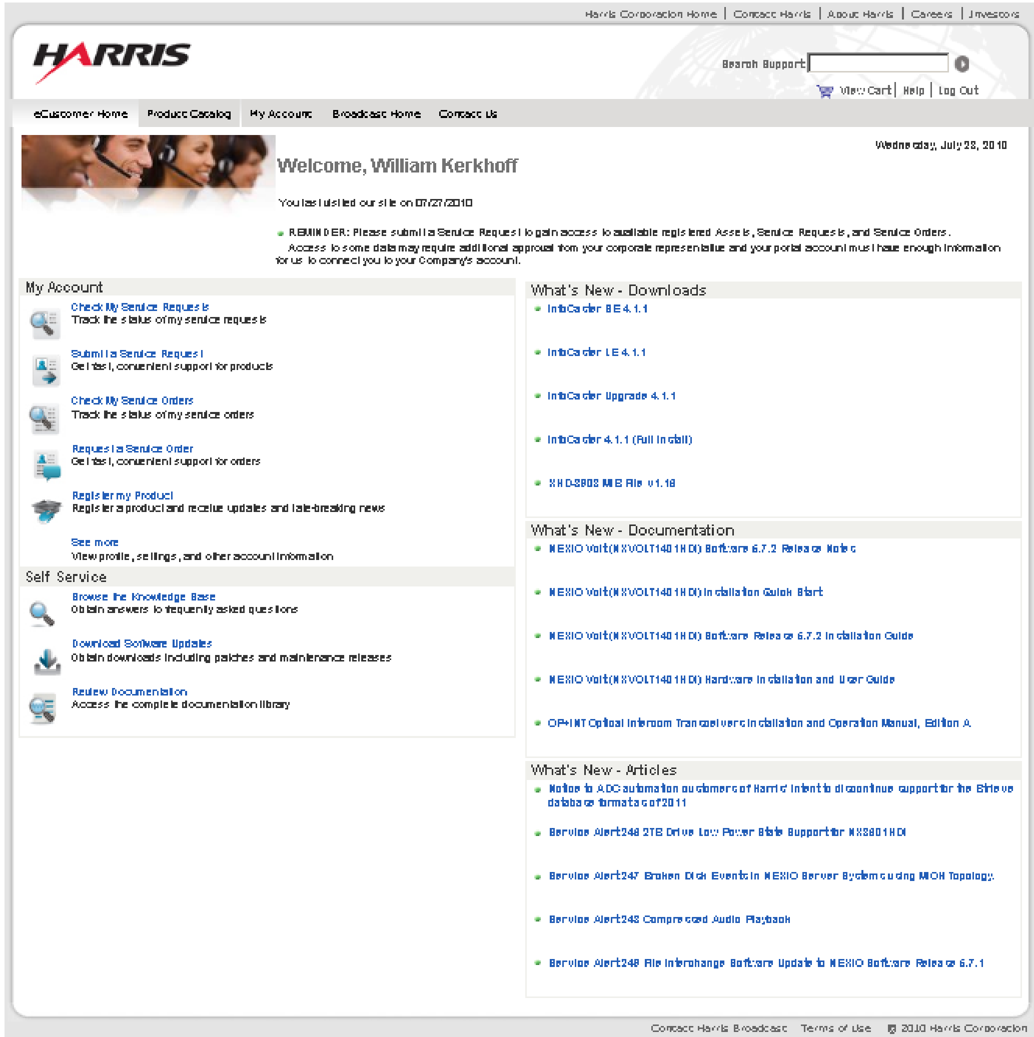
Hexadecimal $= (0) \quad +(512) \quad +(128) \quad + (13) \quad = \quad 653$

Decimal

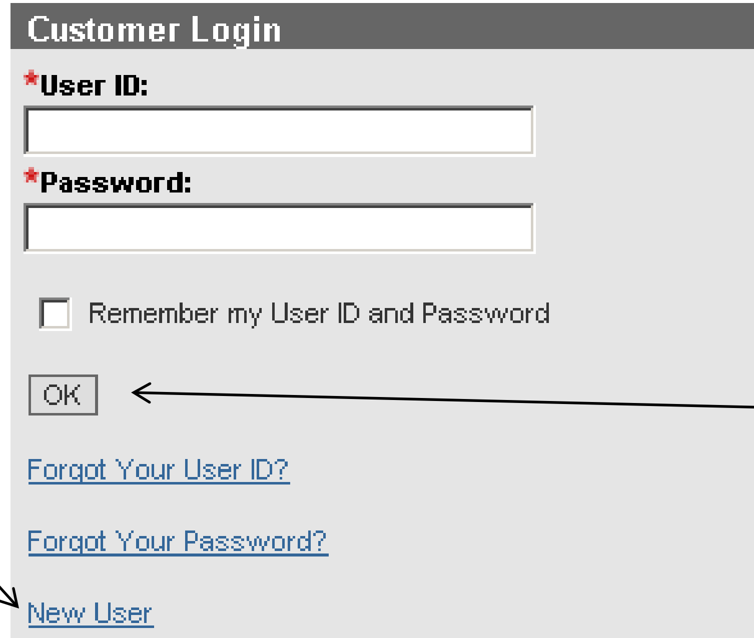
Decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Hexadecimal:	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

BCD Support (service web portal)

- **Go to** http://support.broadcast.harris.com/



BCD Support – Login Screen



Apply for User ID and Password

MUST use OK button to submit User ID & Password

- **If you are a new user select "New User" and then specify a user ID and a password.**
- **Log in using your new User ID and Password.**
- **Note: You must use the OK button to submit your Log In/Password. Using the enter key will not work.**

- Go to this link and create an account (or login if you already have an account)

http://support.broadcast.harris.com

- Logon to the site and click on “Review Documentation”
- Select “Television Transmission”
- Select “UHF Digital”
- Select “Maxiva-UAX”
- Click “Maxiva UAX Series Tech-Manual”
- File Download page will display, select “Open” or “Save”